Form and Expression

The Method of Spatial Composition

Chalmers School of Architecture

Sebastian Andersson
Architecture and Civil Engineering
Examiner: Mikael Ekegren
Supervisor: Björn Gross

Form and Expression

The Method of Spatial Composition

Abstract:
Form & Expression

Throughout the history of artistic creation the will to form a unified work through the relationships of its parts, that endeavour which we call composition, runs as a continuous thread. While analogies between different forms of art exist, what is specific to architecture are the spatial properties of the composition as in the relationships of its architectural elements. Following this understanding, this Master thesis investigates how composition can be used as method of expression.

Relying on the notion that the expressive quality of a work largely depends on the spatial relationships of its parts, the method of composition is researched in a tectonic manner, in essence how an interplay of architectural elements can form expression and character. In this sense, the knowledge of the spatial properties of form to be gained from the architectural tradition is understood as a shared language.

To structure the creation of a whole, proportions becomes important in the forming of its parts, thus being a helpful compositional tool which has guided the research. Proportions can be used to relate the inner spatial design to the outer expression and the manner in which this is done can give shape to the character of the building.

The result of the thesis is a restaurant and a service building situated at the threshold of a 17th century renaissance castle, a park and a small boat harbour in the medieval city of Vadstena. The method of the investigation has been a research by design process in which compositional ideas have been thought of in sketches and then evaluated in drawings and physical models. These ideas have often been informed by the compositional qualities of references from painting, sculpture and architecture. To enrich this method and anchor the project in its setting, analysing the context in terms of spatial composition has been important in the configuration of the project, with an emphasis on rhythm, balance and layered spatial relationships.

As a result of the design, this thesis work intends to demonstrate how a carefully proportioned spatial composition offers the possibility of expressing continuity in the use of architectural elements, unity of individual parts and the very nature of focusing as much on the immaterial, as in the space between elements, as the material itself, expresses a valuable economy of means.

Introduction

Student Background

2017.08 - current	**Master program,** Architecture and Urban Design, Chalmers University of Technology
2017.08 - 2018.07	**Exchange,** Faculty of Architecture TU Delft, Netherlands
2016.06 - 2017.07	**Internship,** EM2N Architekten, Zürich Switzerland
2013.08 - 2016.06	**Bachelor program,** Architecture and Engineering, Chalmers University of Technology
2010.08 - 2013.06	**Secondary Education,** Natural Science Program, Kungshögaskolan, Mjölby

Purpose

The main purpose of this thesis is to investigate how spatial composition as a method, in sense of a careful proportioning and disposition of architectural elements, can be used to create an architectural expression which stands as the result of the conditions of today, yet is rooted in the architectural tradition.

This investigation is conducted in the form of the design of a restaurant and a service building in Vadstena, in direct proximity to a significant 17th century castle. The possibility of using composition to find an architectural expression which reflects both the context and the program is thus to be tested.

Research Questions

The main question of the investigation is:
- **How can spatial composition as a method form architectural expression?**

With the additional questions:
- **How can proportions be used as a tool to create a spatial composition?**
- **How can spatial composition increase the perception of spatial depth?**

Design Objectives

The objectives used to evaluate different design proposals in relation to the research questions are:
- Gestalt / Character
- Unity and compactness
- Proportions and rhythm
- Mutual nearness of elements
- Layered spatial relationships

These objectives are derived and further explained in the subsequent chapter of theoretical framework.
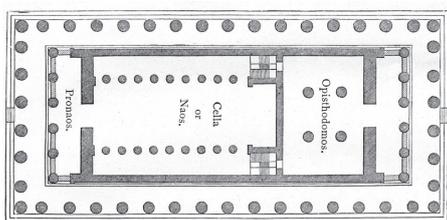
Figure 01. Parthenon, Iktinos (433 B.C.), *(Penn State University Architecture and Landscape Architecture Library, 2007).*
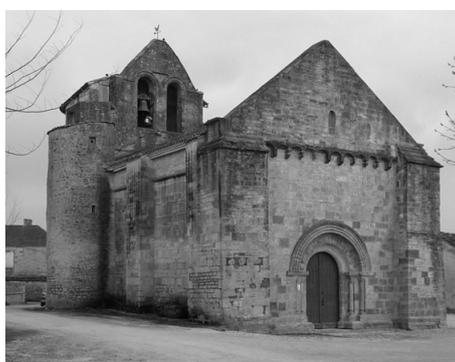

Figure 02. Église Brie-sous-Matha (12th C.), *(Jack Ma, 2010).*

Figure 03. Sainte Marie de La Tourette, Le Corbusier (1960), *(Alexandre Norman, 2007).*

Each time is faced with the necessity of finding adequate ways of expressing the subject matter at hand, which is always determined by the present. Composition is a method continuous in artistic tradition which yet offers this possibility of temporal expression. Composition is something which exists in all forms of art. In music: the interval between tones, in film: how the scenes are framed but also their tempo and the transition between scenes, in painting: the relationships formed between what is depicted on the canvas, in sculpture: volumes and proportions. In the fields mentioned above, composition is used to convey an atmosphere or emotion and inherently expresses a certain view on life. While being analogous to one another, something significantly specific also exists for each field. In architecture this can be explained as the spatial properties of the composition as in the relationships of its architectural elements.

The understanding of this description of composition in architecture is based on the possibility of creating expression and forming intelligible depth through spatial means. In Adolf Hildebrand's essay *The Problem of Form in Painting and Sculpture* (1907), Hildebrand attempts to define a universal law of art based on sight perception of the three dimensional world presented as a clear two dimensional image, which he calls a *Relief Conception.* Much of that which is important in terms of spatial composition in architecture is included in this description. For example the unitary spatial mass of Greek temples expressed in the columns standing in front of the wall of the temple or the successive layers of depth conveyed in the openings of Romanesque churches, both "unifying forms into relief effects to attain artistic unity" (Hildebrand, 1907, p. 99). Parallel to this description, and of equal importance for this master thesis, is Peter Märkli's description of *Gestalt* in architecture as different from pictorial composition, in that its main concern is spatial depth, both in the formation of a facade and in interior rooms, and that *Gestalt* is something which in itself is formless but is that which can give artistic form to the building (Beigel & Christou, 2017, p. 228).

When studying architectural precedents from various times and of different styles, it becomes evident that expression and character has been meticulously planned through a careful disposition and proportion of its elements (Grundström, 1996, p.10). Thus, spatial composition can be understood as a shared architectural language, not bound to either time or place, yet with the possibility of creating temporal expression.

This thesis follows T S Eliot's (1917) argumentation that the individual talent can benefit greatly in the creation of emotion in art by being conscious of "not what is dead, but of what is already living" (p. 73). Consequently, investigating spatial composition as a method is aimed at finding a contemporary architectural expression and formation of space, rooted in the continuity of the architectural tradition.

Method

The method of the investigation is a research by design process in which compositional ideas are expressed and thought of in sketches and then evaluated in drawings and physical models. These ideas are often informed by the compositional qualities of references from painting, sculpture and architecture, understood in terms of a general theoretical framework concerning spatial composition.

Theory

The theoretical framework to guide both the design process and the selection of references are mainly derived from Swiss architect Peter Märkli (1953 -) and German painter and sculptor Adolf von Hildebrand (1847-1921). Märkli's ideas about architectural composition have been vital in the fundamental understanding of the investigation and Hildebrand's theories have been important in the studying of art references. Furthermore, in relation to the program of designing a restaurant, the Viennese Café tradition, as understood through the work of Adolf Loos and Hermann Czech have served as useful guidelines. In the interpretation of historical building examples Claës Grundström's study on proportions has been instrumental, while concerning more recent precedents in art and architecture Peter Celsing's understanding of space as a force field have directed the work. To be aware of the spatial properties of form in relation to expression, Rudolf Arnheim's *The Dynamics of Architectural Form* has served as a useful source of knowledge, as has the theory and practise of Dutch architect and Benedict Munk Hans van der Laan.

Delimitations

The chosen site and program for this thesis have been chosen according to the knowledge that there have existed restaurants at this position in Vadstena earlier. Ongoing discussions between the municipality and the state, which owns the property around the castle, about a new building exist however the plans are currently put on hold because of the important cultural heritage of the castle. This thesis does not concern whether or not one should actually build anything at this spot, but should rather be understood as a possible solution should a new building be conceived.

Reading Instructions

The work of the thesis is divided into four chapters. The first is a theoretical investigation constituting the framework for the design process, the second is a site analysis of Vadstena and the chosen site in particular, , the third is the design process itself with brief explanations of design considerations and the resulting work of this process and the fourth and final chapter discusses the results in relation to the research questions and their related theory.

01. Research: Spatial Composition


Figure 04. Erechtheum (406 BC), *(Jebulon, 2015)*.
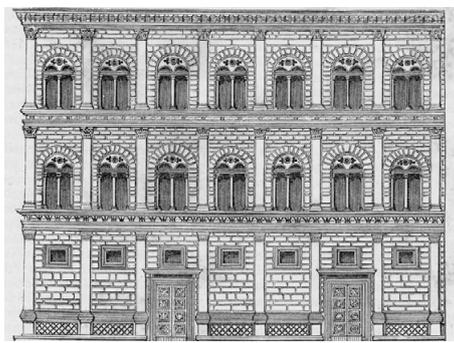
Figure 05. Palazzo Rucellai, Leon Battista Alberti (1451), *(Strafforello Gustavo, 1894)*.

Figure 06. Im Gut Housing, Peter Märkli (2017).

The following introduction contains some the most important aspects related to spatial composition, illustrated by works and theories of both art and architecture, serving as important sources of inspiration. The knowledge and insights gained from this brief introduction constitute the foundation for the research which will be carried through the design process of the project.

In direct relation to the disposition of a composition are **proportions** (and consequently order). Ranging from Egyptian, Greek, Roman, Romanesque, Byzantine, Gothic, Renaissance, Baroque and even Modern Architecture proportions have been an important tool in the formation of an architectural composition. Proportion as a word originates from Euclid, being synonymous with correspondence of relationships, in essence meaning correspondence between the parts of a whole and the between the parts and the whole (Grundström, 1996, p. 12). As such we can understand how proportions can be used both for the slender and slim and for the heavy and powerful, as well as independent from style and time.

Considering composition as an act of forming an intelligible **unity**, the different elements and their relationships serve as means in the creation of the whole as a clear visual image (expression) (Hildebrand, 1907, p. 11). Following Peter Celsing's (1980, p. 118) description of space as a force field upon which different objects acts, we can understand how a **compactness** of plastic form, suggesting a clear space unit, can create an immediate perception in which a building seems to magnetize the surrounding air. The effect of creating a seemingly united space of both solids and voids is a certain tension which focuses the solids and renders the space surrounding it tangible. A similar understanding was employed by Dutch monk and architect Van der Laan who, based on studies of Vitruvius' principles, argued that the sensibility of architectural space could be increased by the **mutual nearness** of thoroughly proportioned elements (Voet, 2016). Intelligible rooms often have the capacity of creating a presence because our perception of space is heightened, through the visual stimuli of a careful disposition of elements, emphasizing volume as an interplay of solid and void, following the description of Heinrich Wölfflin "alles räumliches dient sich aus" (everything spatial extends) (Arnheim, 1977, p. 86).

To heighten the perception of being in a space can be described as an effect where one becomes aware of one's own position and bodily size through **layered spatial relationships** in a total space. The sense of depth by layered spatial relationships enable the perception of the continuous extension of air enveloping solid volumes, thus holding the capacity for simultaneously experiencing spatial unity and capaciousness (Hildebrand, 1907, p. 47). This effect is not limited to either the exterior or the interior, as spatial sequences and their connections can be experienced in both, though naturally the perception of one's own size depends on the size of the spatial extension. In the exterior, to be able to perceive the continuity of space through spatial sequences, a careful disposition of plastic volumes (in terms of architecture) is necessary. In the interior on the other hand, one way of increasing the perception of space can somewhat paradoxically be the (careful) dissolution of its definition, the same effect often experienced in thresholds between outside and inside which architects with a modern spatial conception, Adolf Loos being amongst the first, has successfully created in interior rooms as well.

Figure 07. Villa Winternitz, Adolf Loos (1932), *(Lindsay Grant, 2011)*.

Figure 08. St.Benedictusberg Abbey, Hans van der Laan (1968-83), *(Diego Terna, 2011)*.

Figure 09. The Economist Building, P. & A. Smithson (1964), *(seier+seier, 2010)*.

The **rhythm** created by the sequence of elements and intervals has been of great importance throughout the architectural tradition. During the Renaissance it was considered analogous to music and harmonical consonances, an analogy still common today. (Proietti, 2015). Bearing in mind similarities between spatial and musical composition when considering the rhythm of a facade, one might not seek for a total symmetry. Rather, what often seems to bring a facade to life is when a compositional interplay is used to find a harmonious whole, a balance between dynamic and static expression (Selz, 1968, p. 14). In architecture, this can for example be achieved through subtle asymmetries in an overall symmetrical composition to introduce vitality in a static condition, a conveying of nuances not immediately perceivable yet strengthening the harmonious impression of the whole (Mostafavi, 2002, p. 12).

Surely does not only the disposition of architectural elements matter in the (heightened) perception of space. An important role must also be attributed to the material which constitute those elements. **Texture and colour** influence the perception of space to a great extent. Whether the outline of a building should be emphasized, by the use of colour as material, or if it should create a spatial unity with its surroundings by using colour and textures as sensations largely depends on the situation at hand. Moreover, certain spatial effects can be achieved with the use of material and colour (Mostafavi, 2002, p. 15). This can for instance be the highlighting of certain elements or points in a space to either increase the sense of depth or to make them seem shallower, or to create a contrast which highlights the outline of a building even when seen in shadows.

Through this introduction, the derived design objectives for this master thesis project within the theme of spatial composition are relief conception (or gestalt), unity and compactness, rhythm and proportions, mutual nearness of elements and layered spatial relationships. The selection of precedents is intended to manifest both the universal qualities of spatial composition, as well as the inherent ability of creating expression through architectural language (left page) and a heightened perception of being in space (right page).

Expression
Spatial Language
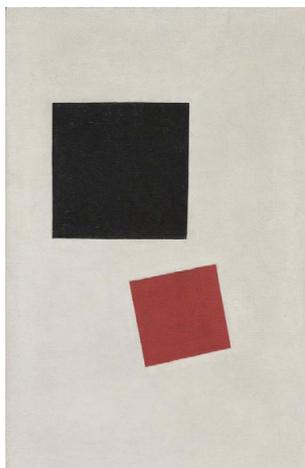
Figure 10. Black Square and Red Square, Kazemir Malevich (1914).

Kazimir Malevich (1927) argued in his manifesto *The Non-Objective World,* that the mere relation between elements was enough to convey sensations (p. 65). Looking at his suprematist paintings, one is indeed inclined to agree. The colour, precise geometric operations and the relationships of the different element of the compositions give vivid expression to the paintings, a notion intriguing for architects. When looking at precedents from the architectural tradition in terms of spatial composition, not only does the universal method of forming a unity through the spatial relationships of elements become evident, but also how this has been used as expression of the human conditions. Simultaneously, there exists something continual and something temporal, expressed in the in the use of architectural elements as a continuous approach and their disposition as to fulfil the conditions of that specific time.

When Märkli states that "Gestalt does not have its own form, but it gives form to a building" (Beigel & Christou, 2017, p. 228), he is referencing to how architectural elements are used to form expression, through their spatial relations. This architectural expression could be understood along the line of Ludwig Wittgenstein "architecture is a gesture" (Kühn, 2016. p. 22). The architectural expression thus can be seen as a gesture which through its character forms our relation to the building. This relation is perceived spatially and is not something specific to architecture, but rather is fundamentally human (Beigel & Christou, 2017, p. 232).

Tradition and Individuality
Past, Presence and Future

Figure 11. Göteborgs Rådhus, Gunnar Asplund (1936), *(Stig Sjöstedt, n.d.).*

(...) in spite of his practise and his fame, [he] was a reflective practitioner who maintained that he aspired to be one member of the choir. Let us hope that more ambitious designers have the courage to adopt as relaxed a stance in this subject.
(Celsing, 2016, p. 6)

The emotion of art is impersonal. And the poet cannot reach this impersonality without surrendering himself wholly to the work to be done. And he is not likely to know what is to be done unless he lives in what is not merely the present, but the present moment of the past, unless he is conscious, not of what is dead, but of what is already living.
(Eliot, 1917, p. 73)

Seeing that spatial composition is not bound to any particular style or movement but rather is an attitude to the architectural profession, it becomes clear that the architectural tradition can be understood in continuous and universal terms. The method of a careful disposition of architectural elements to form expression and spatial characteristics is not constrained to any time boundaries. Thus, by looking at precedents, one has the possibility of learning a universal architectural language and in the meantime developing one's own As such, working within the tradition of a practise does not converge towards imitation and historicism, but rather can be a way to mediate between a personal and universal expression of architecture, giving rigidity to one's attitude toward the present. Furthermore, such a stance would promote the collective character of architecture, architecture as being a support for life, but not life itself, as pointed out by Hermann Czech (2016) when stating "architecture is background" (p.14).

Art and Architecture
The Role of Art in Architecture

Figure 12. Riksbanken, Peter Celsing (1970).

During modernism, the exaggerated belief in measurable criteria lead to a rupture between art and architecture, ignoring beauty as a functional demand, often resulting in a dullness of expression (Linde, 1980). Consistently pointed out by Peter Märkli (2016, ch. Form and expression) the loss of the vocabulary of forms is still very much present today from which architecture without a doubt suffers from, as it does not know how to, or is unwilling to give the proper character and expression to the life which it is meant to serve. So, how might one as an architect learn how to give architecture a convincing form?

As explained in the previous text, one vital option is to seek answers by looking at historical precedents in their universal terms of architecture. Another option, definitely applicable when considering spatial composition is to look to art for knowledge. Bearing in mind Peter Celsing's (1980, p.118) assertion that the judgement of an architect is largely dependent on visual perception, one understands the importance prompted by Märkli (2016, ch. London) that "a schooled eye is a requisite for passing judgement on the visual world.", a knowledge which definitely can be greatly increased by actively learning from art. The aim is then neither to reintroduce ornamentation nor claim the autonomy of art as applicable to architecture, rather it is a quest to use knowledge gained from art as means to give proper form and expression to the functions of a building, so that it is pleasing and can contain qualities constructive for everybody. However, it is of course important to remember what is specific to each art discipline (considering architecture as the art of construction).

Spatial Depth
Perception of Space

Figure 13. Mont Sainte-Victoire and Château Noir, Paul Cezanne (c.1904-1906).

Figure 14. Nature Morte, Giorgio Morandi (1920).

The compactness and unity of Paul Cézanne's paintings was an deliberate act. While this might have reflected Cézanne's philosophical view on life and nature the perspective effect of creating a seemingly united field of view is a certain tension which focuses the subject being depicted and renders the space surrounding it tangible (Loran, 1959, p.15). This perception of space, not as a continuous vacuum which is an idea originating from Plato (Arnheim, p. 12), but rather as something which can be heightened and have a tension is an understanding common in painting and sculpture. Looking at a still life from Morandi inevitably makes one notice the importance of the spatial relationships between objects depicted.

In architecture, the perceived depth of a facade or how the spatial characteristics of an interior room is affected by the forms used and their relation to one another can benefit greatly by thinking about space as something created, with varying density and energy (Arnheim, p. 22). Then, the method of composition can be truly helpful when considering not only the architectural elements in themselves, but their effect on the spatial characteristics too. As already mentioned, such an approach has been employed by for example Peter Celsing and Hans van der Laan, who both strived for a dynamic expression of space through a careful disposition and proportioning of the elements used, always paying outermost care to relation between the parts and the whole.

As pointed out by Peter Märkli, both in his works and his theories, our perception of spatial depth and that which also very much determines the expression of a building depends on its spatial relationships of its different elements ((Beigel & Christou, 2017, p. 228). For example, a juxtaposition of distance between elements in different layers of a facade might give the building a vivid rhythm as well as increase the perception of its spatial depth.

02. Site analysis

Description
Vadstena

Figure 15. Copperplate: Vadstena Castle. (Karlsborgs fästningsmuseum, 2017).

The site chosen for this master thesis is the small town Vadstena. Vadstena is an old medieval city with a rich cultural history, located at the eastern shore of lake Vättern. Vadstena attracts many tourists, where the highlight could be described as the combination of a picturesque city centre and important building artefacts such as Vadstena Castle and Vadstena Abbey. The castle and the abbey are within walking distance and can be reached by a promenade along the lake, or through the city centre. When approaching the castle, visitors first reach a park, called Hamnparken. It is a place of both festive events and summer picnics with large old trees and a striking view of the lake and the castle. There have been restaurants located in the park, but at the moment there is none, although plans have existed for quite some time for anew building including a restaurant and an upgrade of the service functions for the adjacent little boat harbour.

Figure 16. Plan 1:5000. The site of the project marked in red. The location of the project exists at the threshold of the castle, the park and the harbour.

The urban fabric of the city core of Vadstena consists of small scale buildings and narrow stone paved streets, combined with buildings with an important urban function situated at the two main squares of the city and their connecting road and the two most prominent buildings, the castle and the abbey oriented towards the shore of Vättern.
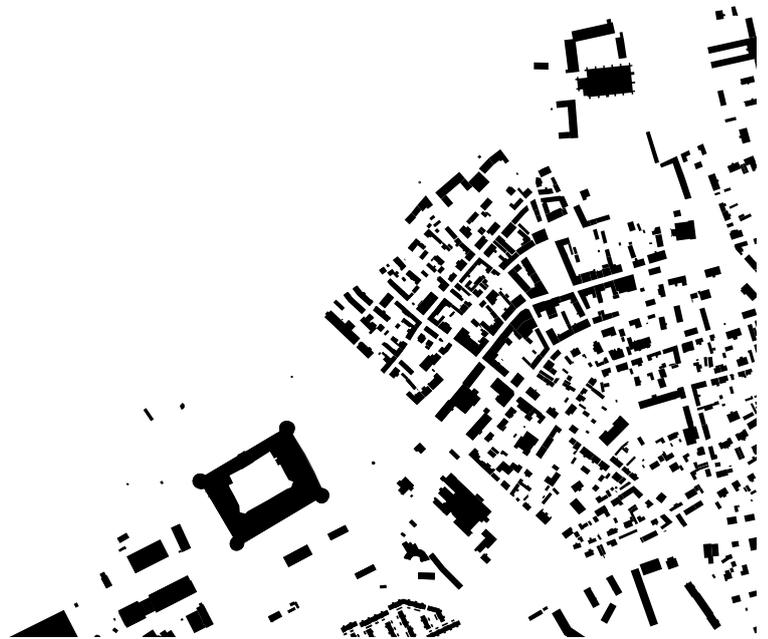
Figure 17. Schwarzplan 1:10 000.

Figure 18. Greenery and Water 1:10 000. The urban fabric is situated along the shore of Vättern, with a lot of green gardens between the houses.

Figure 19. Plan 1:10 000 . The most important access ways to the site marked in red.
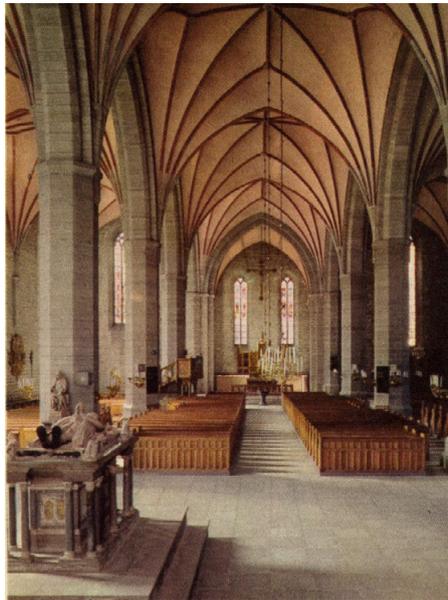
The material culture of Vadstena exists as a combination of important building artefacts and smaller houses, often showcasing an intriguing mixture of materials and forms as the result of subsequent alterations and extensions. The expression of the artefacts primarily relies on stereotomy as its method of construction, with knowledge gained from abroad combined with the local construction context. The abbey of Vadstena is probably most know for its relation to Saint Birgitta, who through a divine vision adviced its layout and design. The oldest yet existing Court House in Sweden is located at one of the squares of the city and the city itself served as inspiration for many of the distinguished architects in Sweden during the National Romanticism at the end of the 19th century.

As important for the impression of Vadstena as the built environment is the surrounding landscape. The presence of Vättern, with its shallow sand bottom and bright colour, the adjacent agricultural fields of rich soil as well as the nature reserves Tåkern and Omberg all have a great influence on the understanding of Vadstena and its history.

Site
Vadstena, Hamnparken

Figure 22 - 28. Images from the site and the park.

The building regulations of the site stipulate that a new building in the designated area must pay considerable consideration in its layout in respect to the castle. This thesis project aims to show that a convincing architectural expression can be created in such a location, without obstructing the perception and appreciation of existing, important artefacts. On the contrary, a symbiotic relation will be sought, and so pay deference to the efforts of previous generations.
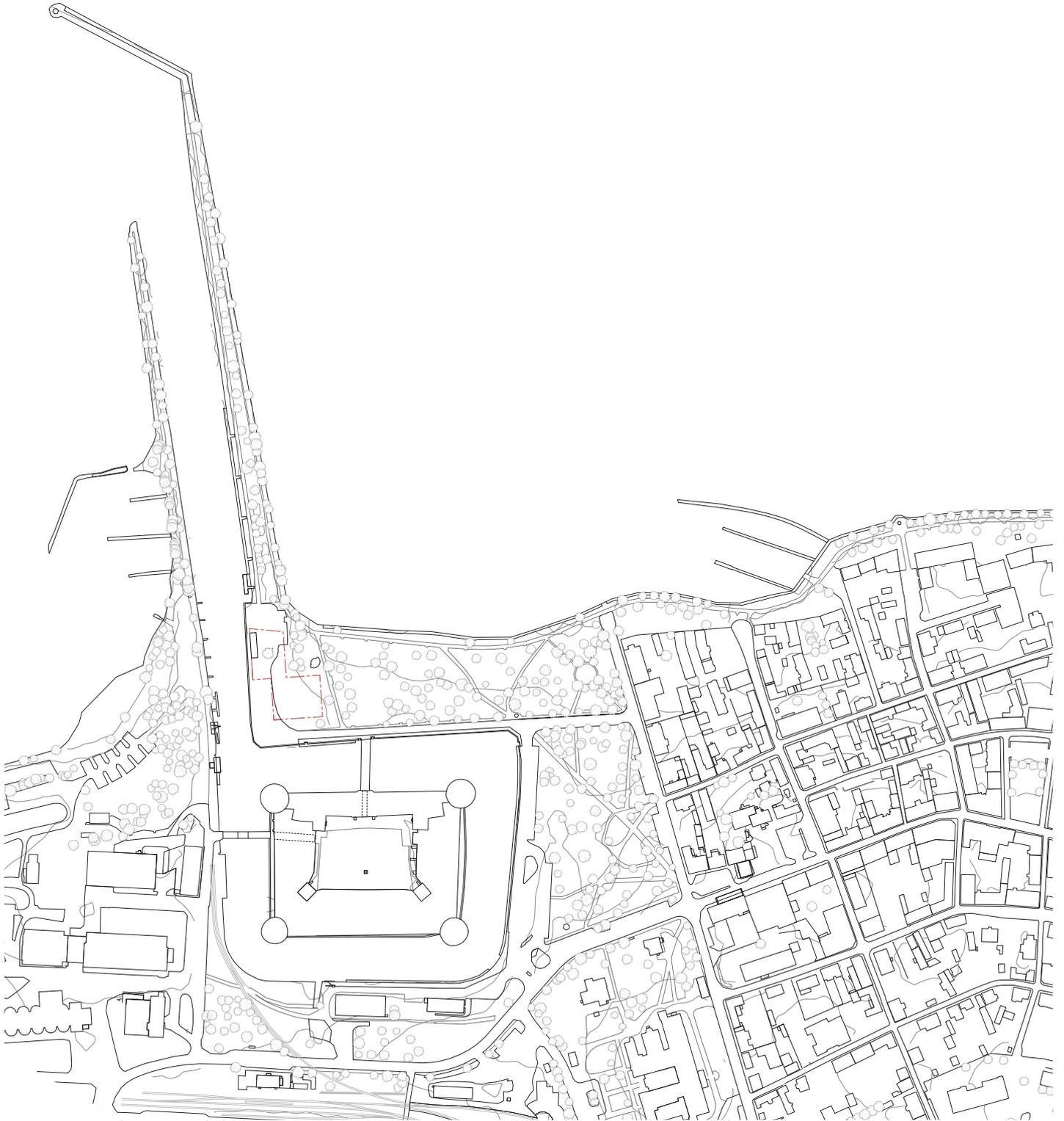
Figure 29. Plan of park, 1:4000.
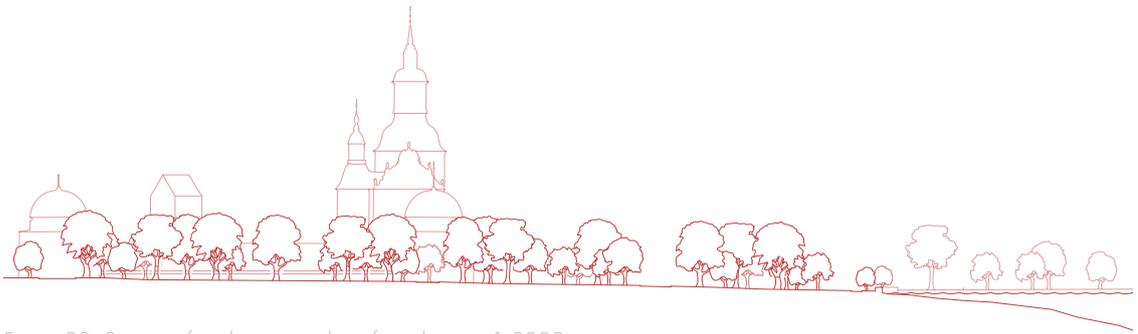
Figure 30. Section of park, approaching from the city, 1:2000.
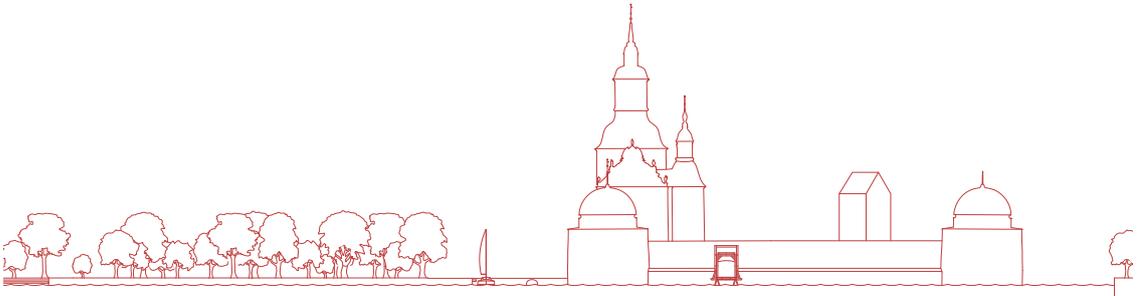
Figure 31. Section of the harbour, 1:2000.

Hamnparken is situated between the core of the city and the castle. When approaching the castle, one moves either diagonally through the eastern part of the park from the city, or along the lake promenade next to Vättern. Either way, the presence of the park, the water and the castle are all strongly experienced. The layout of the park is that of diagonal pathways and old, large trees which, especially creates a sequence of openness and closeness. A similar spatial rhythm can be experienced when moving from the bridges connecting the castle with the land, through the castle itself and to the castle courtyard. The two strips of land of the harbour inlet, with a pier of the one reaching the furthest into Vättern, creates a strong axiality to the park and the castle. This axiality is today somewhat lost due to the tattered edge of the park towards the harbour.

Figure 32. The castle as seen when approaching from the city.

Vadstena Caste was initiated in the 16th century by King Gustav Vasa as a defence fortress and extended in the 17th century as a renaissance palace by his son Johan III. The palace faces the adjacent park, with fortification embankments on the remaining sides, with two towers at the corners of the eastern side of the castle courtyard and cylindrical gun towers at all corners of the fortification. During the 17th century the palace served as royal residence, whereas it today is used mainly for festive events and houses the regional archives.

The castle showcase an architectural richness by small deviations in the otherwise symmetrical façades, a strong materiality paired with windows flushed with the facade surface, volumetric juxtaposition and reserved yet festive interiors. Thus, there exists many possibilities for establishing a link between the architectural language of the old caste and the project.

Figure 33-37. Images of the castle from exterior, interior and in the park.
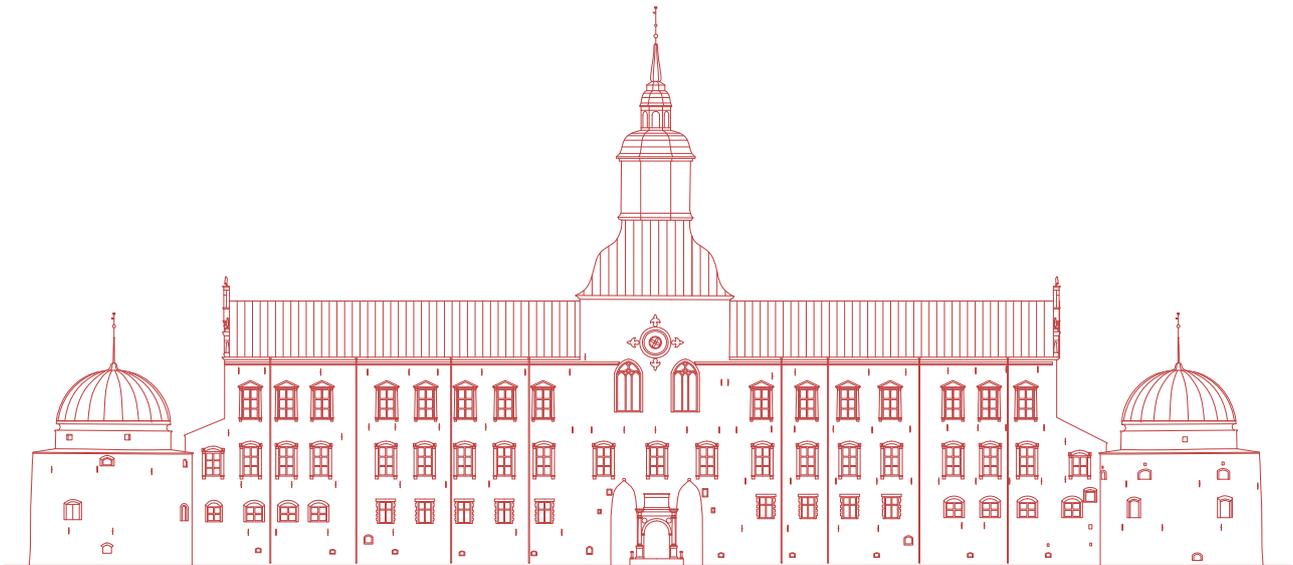
Figure 38. Elevation of the castle towards the park, 1:1000. The main facade of the castle is organized symmetrically around a centralized tower containing the entrance portico and a church on the upper levels, with two adjacent wings leading to the cylindrical defence towers. In terms of composition an overall harmony is achieved by a symmetrical disposition of windows, containing small alterations as the result of the internal layout.
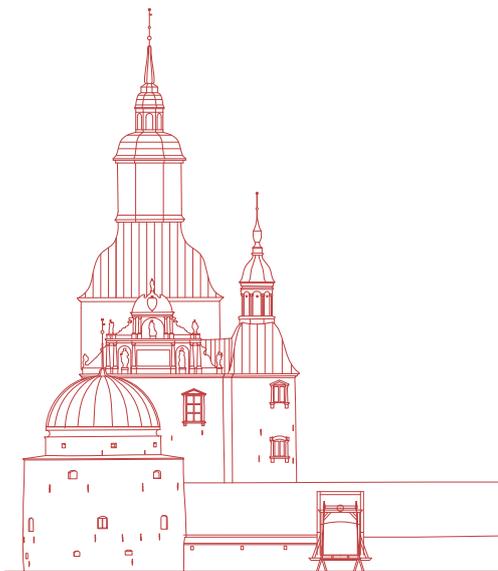
Figure 39. Side elevation of the castle, 1:1000. The side elevations of the castle are characterized by a juxtaposition of forms which yet attain an outstanding architectural unity.

Figure 40. Section through one of the wings of the castle, 1:1000. The structure of the castle consists of thick stone walls, decreasing in width with each level, with wooden beams spanning between the walls and topped with a truss roof structure.
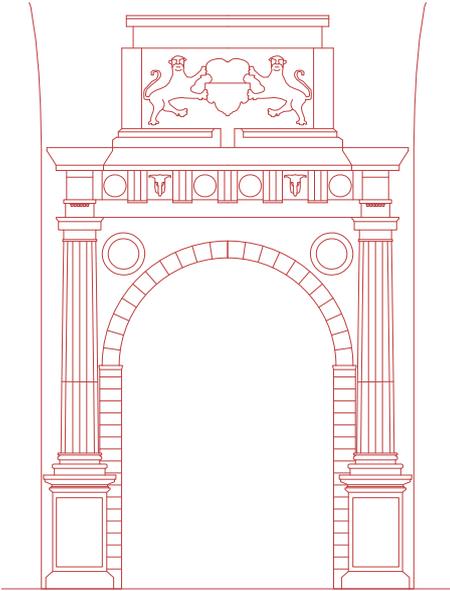
Figure 41. Elevation of entrance portico.
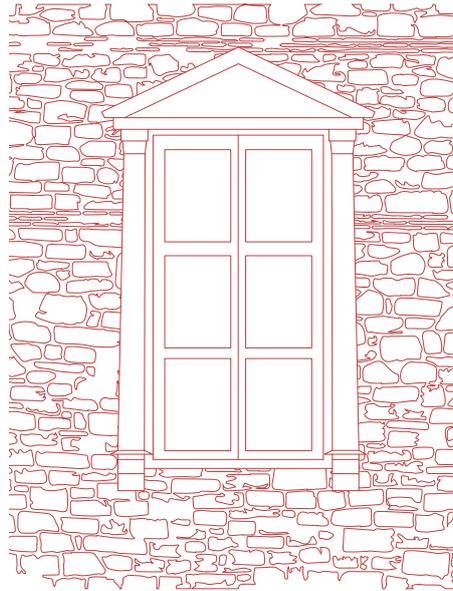
Figure 42. Detail of window from outside.
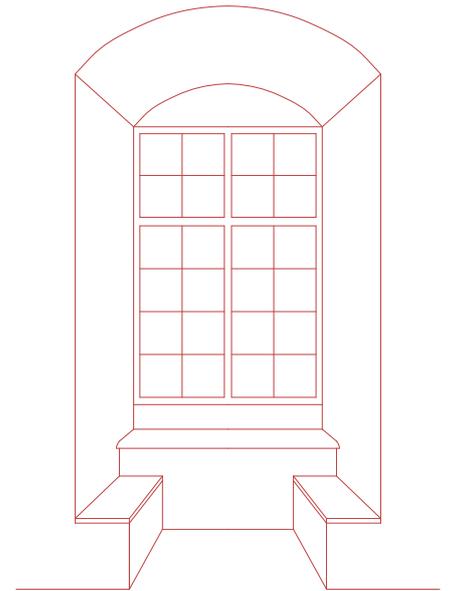
Figure 43. Detail of window from inside.
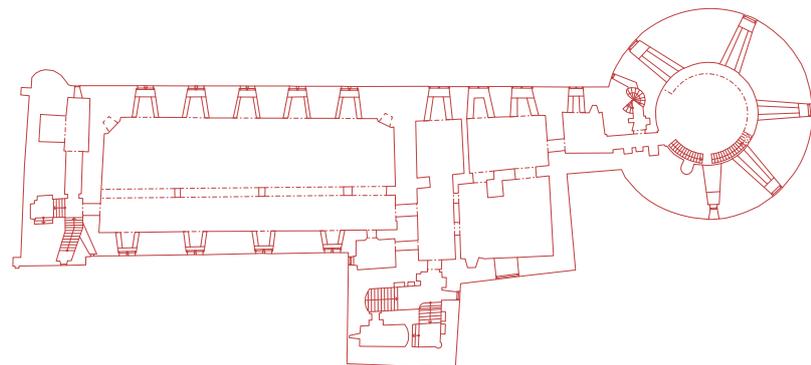
Figure 44. Plan of the eastern wing, 1st floor, 1:1000. The plan of the first floor of the eastern wing is characterized by the division into two zones of different widths, which together with the slight alteration of the position of the window openings creates a spatial dynamic and rhythm.

The entrance portico designed by Pierre de la Roch(e) is an outstandingly well executed example of one of Serlio's doric entrance motifs as presented in *Regole generali di architectura* (Fulton, 1996, p. 124). This inspiration taken from renaissance, as in the entrance, as well as the spatial organization of a tower with adjacent wings known from French renaissance castles, combined with the local building tradition is significant for the castle (Alm, 1996, p. 62). Originally the walls of the castle were rendered white, but today as the rendered has washed off, the combination of rough materiality of the granite, lime- and sandstone and the elegance of the windows is an important as well as inspiring characteristic.

Figure 45. The current service buildings.

Figure 46. Storage buildings forming a successful relationship to the castle in terms of architectural character.

Figure 47. Vadstena Castle, view from Airplane, with former restaurant. *(Unknown, c. 1930-1940).*

At the site services do currently exist for the guest harbour, they are however, of low architectural quality and do not form a relationship to the context. The only buildings in the proximity of the castle which have a satisfactory character are the former storage buildings, located to the south of the castle.

Space Program

Café and Restaurant

Entrance	22 sqm	
Foyer	8 sqm	
Toilet	5 sqm	
Wardrobe	8 sqm	
Café	64 sqm	
Bar	8 sqm	Connection kitchen
Seating area	56 sqm	Approx. 50 seats
Restaurant	84 sqm	Approx. 60 seats
Bar	12 sqm	
Seating Area	62 sqm	
Open-air Café	120 sqm	Approx. 70 seats
Park	80 sqm	
Terrace	40 sqm	
Kitchen	72 sqm	Separate Entrance
Kitchen	28 sqm	
Washing-up	8 sqm	
Storage	8 sqm	
Food	1 sqm	Elevator
Changing room	8 sqm	Incl. toilet
Other	17 sqm	
Storage	20 sqm	
Technical room	4 sqm	
Toilet	8 sqm	
Total	420 sqm	(+10% Circulation)

Harbour service

Administration	40 sqm	
Office of Harbour Captain	16 sqm	Daylight, reception
Office of Sea Rescue	12 sqm	Daylight, pantry (shared)
Storage	8 sqm	
Toilet	4 sqm	Shower
Changing rooms	36 sqm	Access harbour | (x2)
Changing area	8 sqm	
Showers	6 sqm	
Toilet	2 sqm	
Storage	1 sqm	
Other	17 sqm	
Washhouse	12 sqm	Access harbour
Public Toilet	5 sqm	
Total	106 sqm	(+10% circulation)
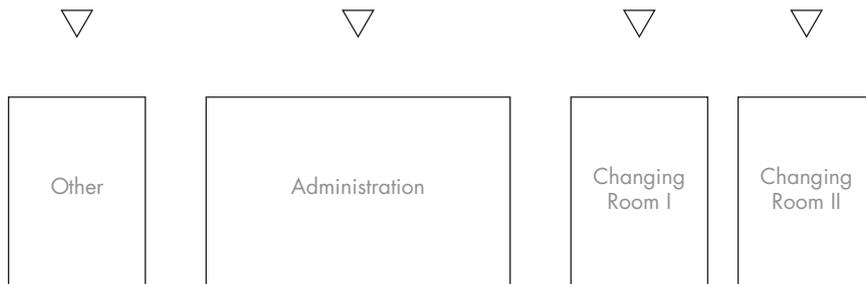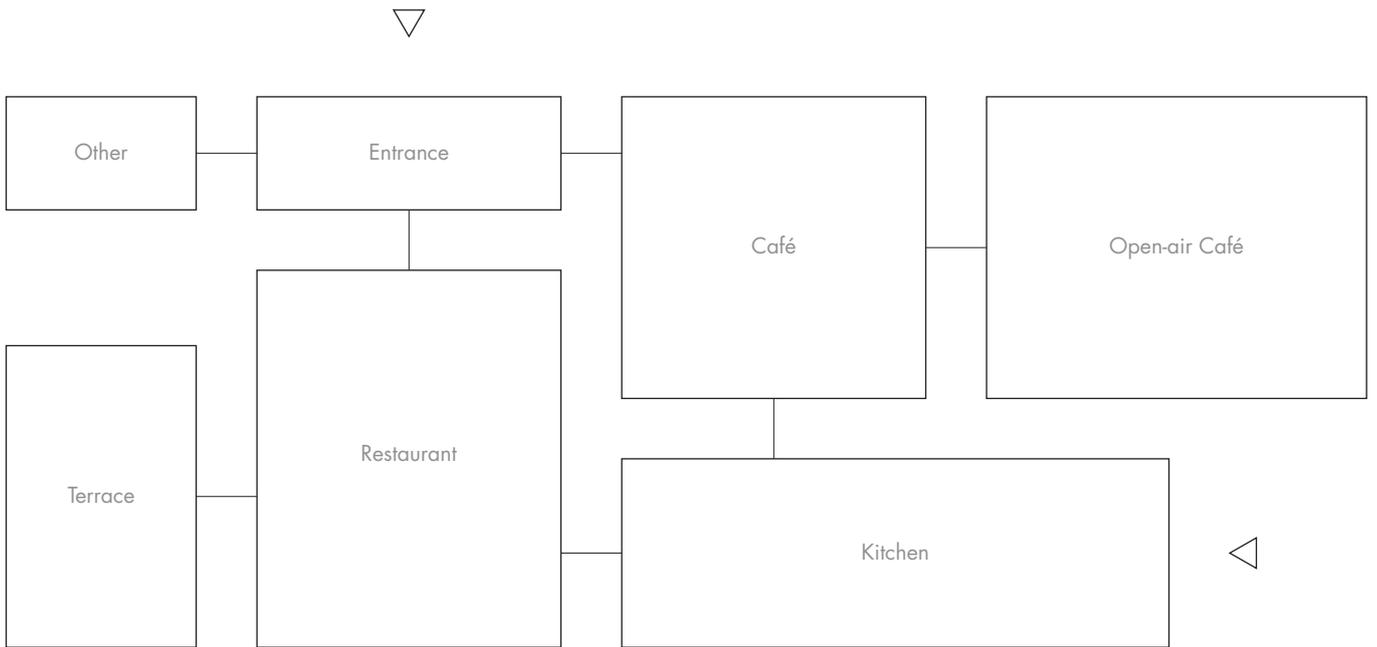
Figure 48. Diagram of Space Program.
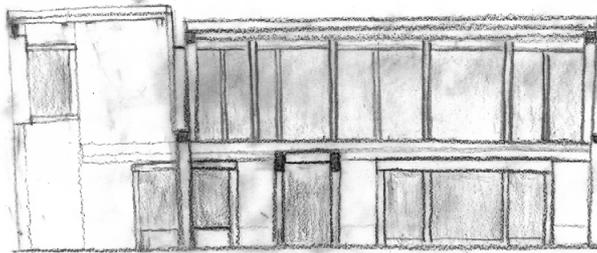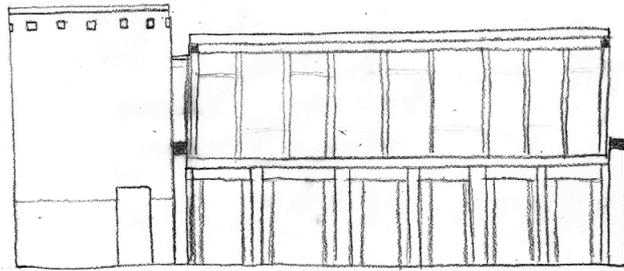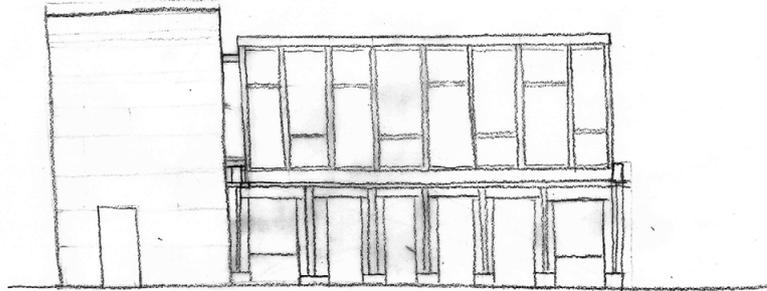
Figure 49. First ideas of building expression.

03. Design

The urban idea of the project is to create a vivid public space at the hinge of park, castle and harbour by forming a spatial relation between them. This relationship is formed by the division of the program into two separate buildings, one containing the restaurant and the other the services for the harbour. The restaurant is then placed in the middle of the grass area of the park, currently not being an active part of the park, with its outdoor seating towards the harbour, creating an active link between castle, park and harbour, adding a new quality to the park. Furthermore, the division of the program into two separate volumes enables an enhancement of the axiality existing between the castle, the park and the pier through the re-establishment of the border of the park towards the harbour.

While moving through both the park and through the castle and approaching the project a strong sense of rhythm is created by the spatial sequence of large and narrow spaces. This characteristic is reflected in the placement of the restaurant and in its interior layout. The elevation of the castle towards the park has a strong frontality through its centrally symmetrical composition. Inherent to this type of centrality is a strong visual expression, but also monumentality. The expression of the restaurant is intended to express the same type of frontality, yet without the centrality, as a reflection of the conditions of our times and the function of the building. Another important aspect in terms of expressing a modern view on life is the big windows to the kitchen, where the service function is allowed to become part of the character of the building. The vertical emphasis of the entrance of the restaurant establishes a dialogue with that of the castle. The approach to the restaurant follows the diagonal pathways of the park, whereas on the side of the harbour the paths to both buildings are straight, more strongly establishing their own place. Even though the castle consists of several different forms it still maintains a significant architectural unity. While maintaining a unitary outline, the rhythm of solids and voids in the restaurant is meant to reflect the interplay of forms of the castle

Previously rendered in white, today, the materiality of the castle shows its way of construction, in several layers of stone over a long time. The result is a rough, monochrome materiality which is elegantly balanced by the windows in flush with the facade. Furthermore, the monochrome character harmoniously anchors the castle in the context of the surrounding water and the greenery of the park by the equivalence of colour between building and nature (in essence: no artificial colours in either building or nature) and the interplay of tones and shade resulting from the rough materiality of the stones allows such nuances and variety as the natural textures of the park. With inspiration from the castle, the materiality of the project intends to achieve the same effects by using grey lime wash on bricks with excessive mortar combined with a glaze painted wooden structure on the first floor. The blue nuance of the grey is meant to balance the yellowish tint of the sand- and limestone of the castle. Another important aspect of the monochrome character is that the totality of the building is strengthened, the building does not try to disappear in the local landscape, rather it blends in harmoniously while yet being clearly distinguishable.

Upon entering the restaurant an experience of its width, height and length accompanies the visitors when moving through the building. The ground floor is defined by layered spatial relationships between inside and outside as well as between the bar and the more intimate seating area. The first floor containing the restaurant is characterized by clearly defined yet interconnected rooms which create a vivid spatial experience.

The expression of the service building rests on the element of the loggia towards the harbour. The loggia acts as a public element yet allows some of the functions of the building to be slightly hidden.
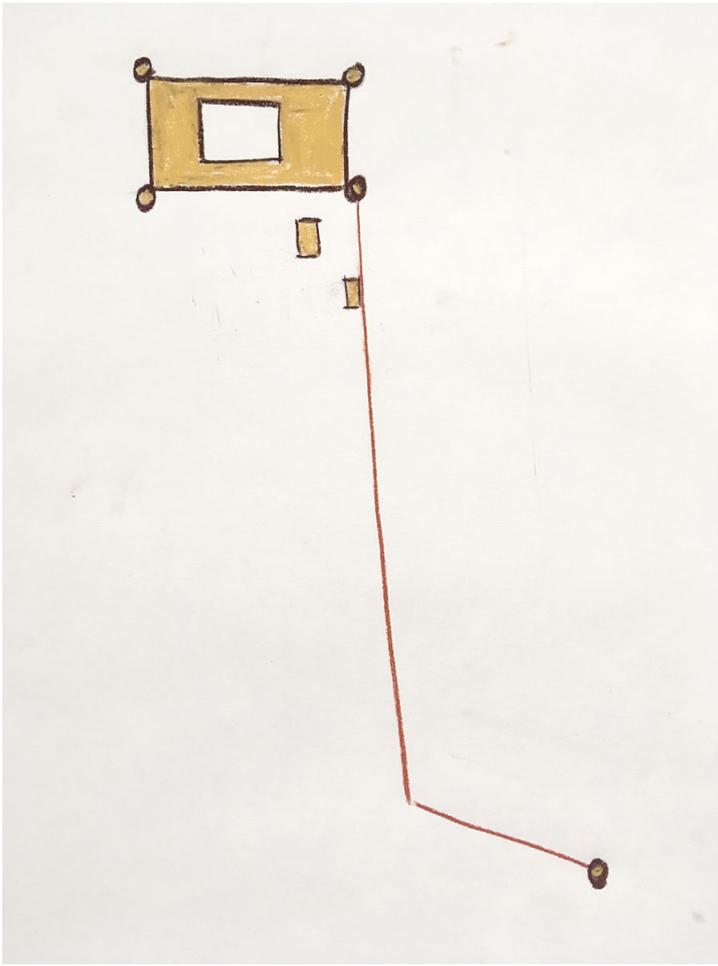
Figure 50. Urban Idea: relation between the castle, the project and the pier, strenghtening the axiality of the pier while definining a place for the new buildings.
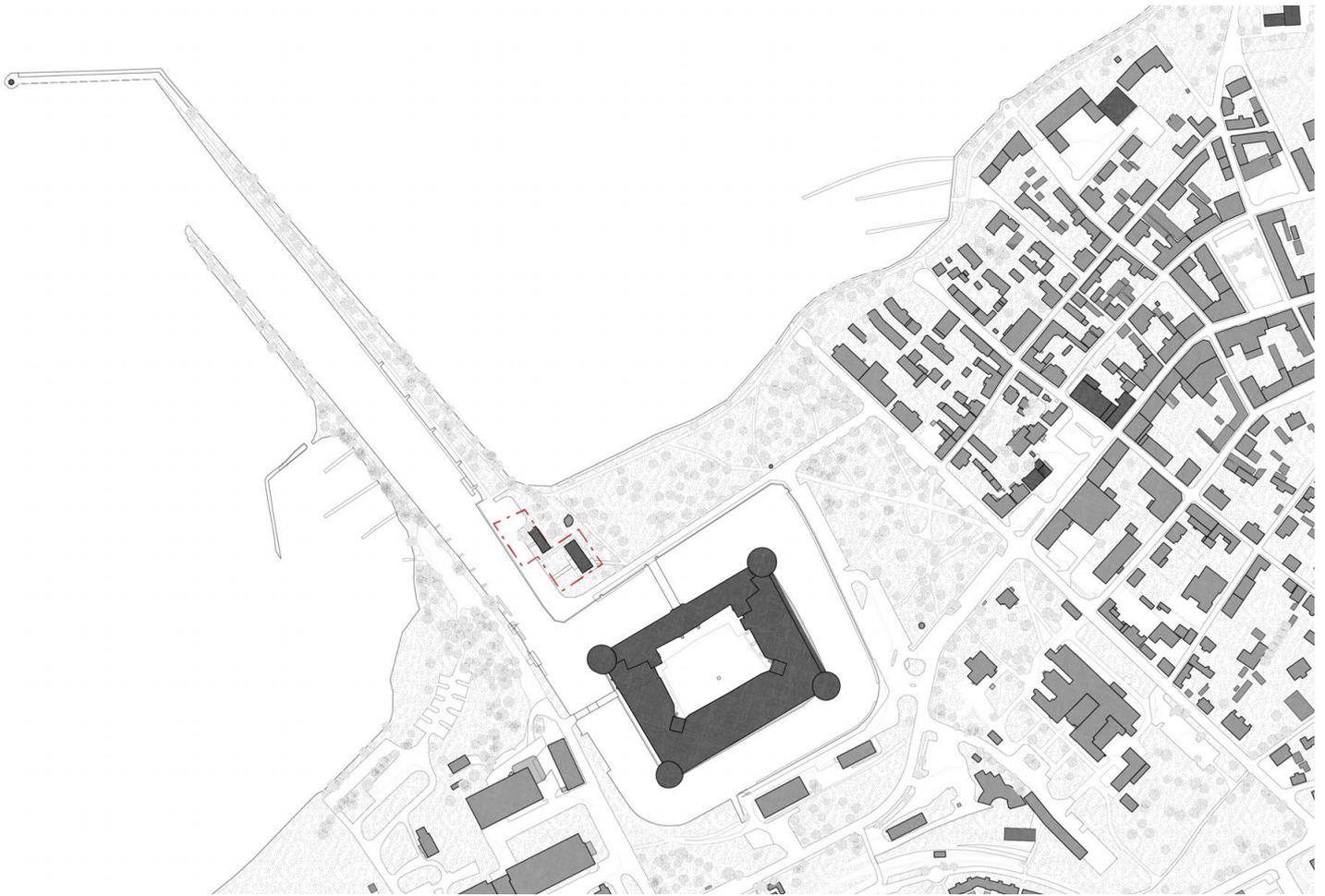
Figure 51. Site Plan 1:5000

Figure 52. Site Plan 1:2000
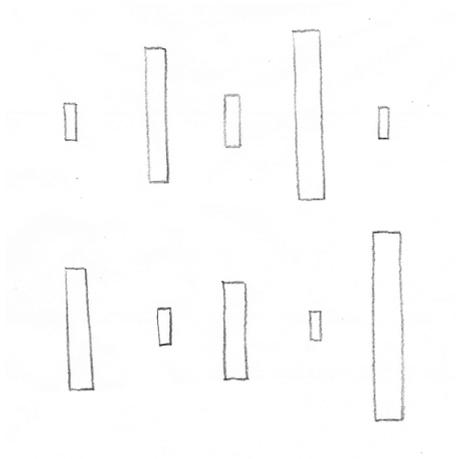
Figure 53. Sketch of spatial rhythm. A strong rhythm is the experienced when moving through both the park and the castle.
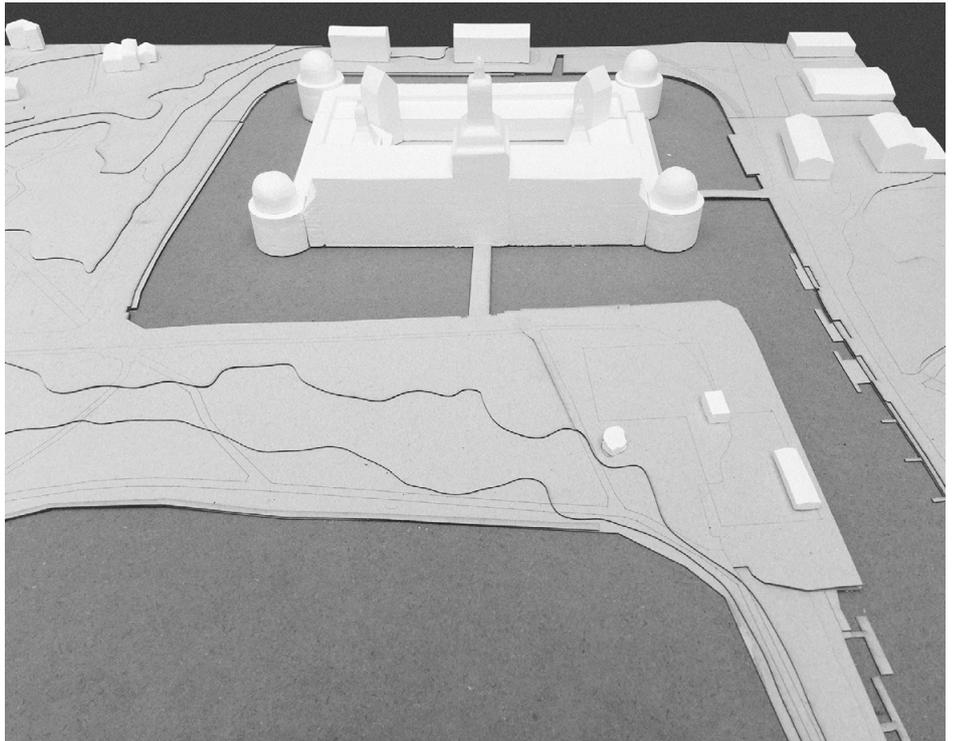
Figure 54. Site model 1:1000, existing situation. The urban idea is to enhance the public character of the park by establish a spatial relationship between the castle and the restaurant, as to keep the castle a living artefact, part of the daily life of the city.
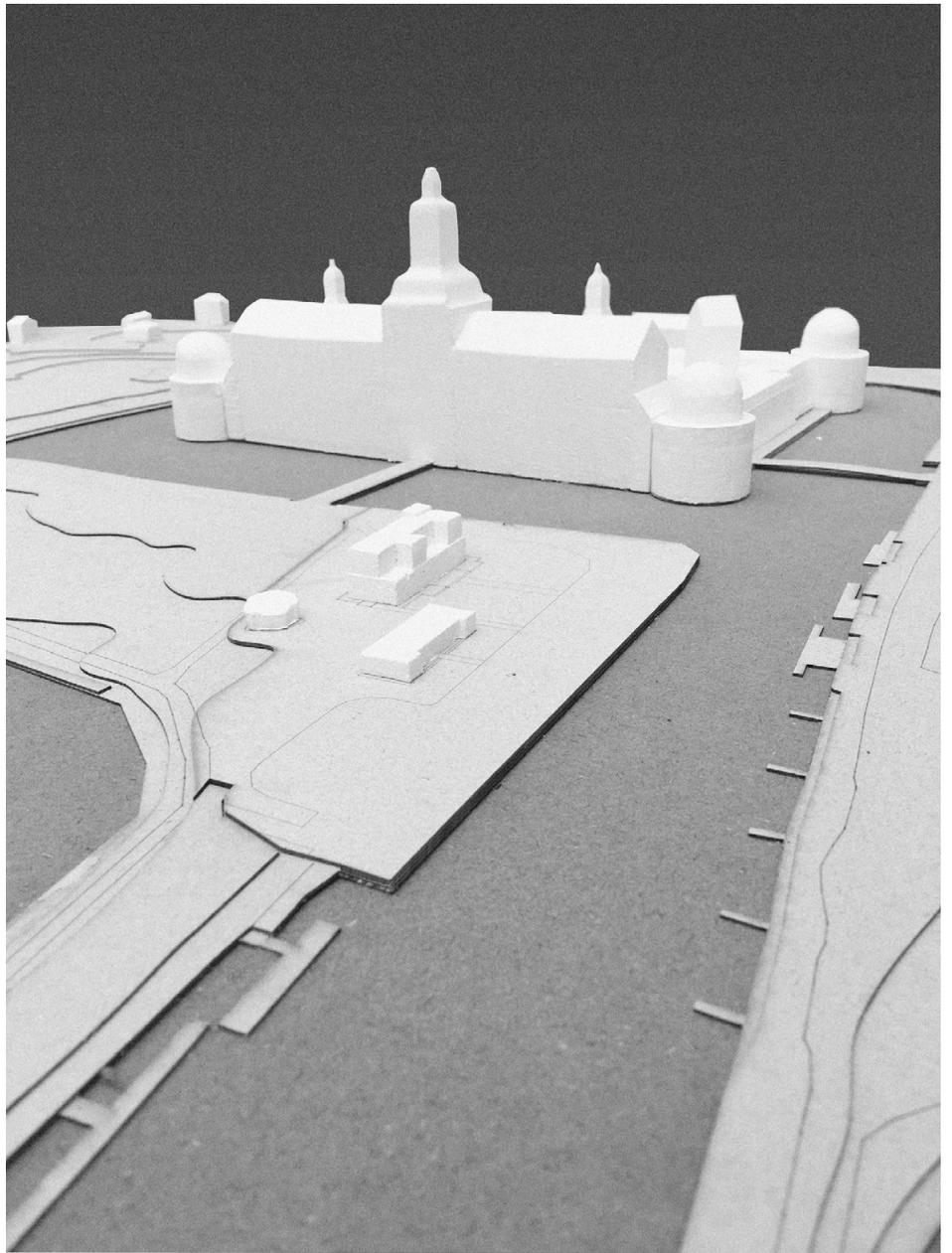
Figure 55. Site model 1:1000. The new additions to the park form an ensemble together with the existing music pavilion.

Figure 56. Danaë, Antonio da Corregio (1531). The diagonal composition creates a strong sense of depth. The placement of the restaurant and the service building in relation to the castle is intended to create the same effect.

Figure 57. Model 1:50.
The vertical emphasis of the entrance establishes
a relation to the castle, as does the diagonal
approach in relation to the park, anchoring the
building at its location. The ground floor acts as a
base for the festive upper floor.
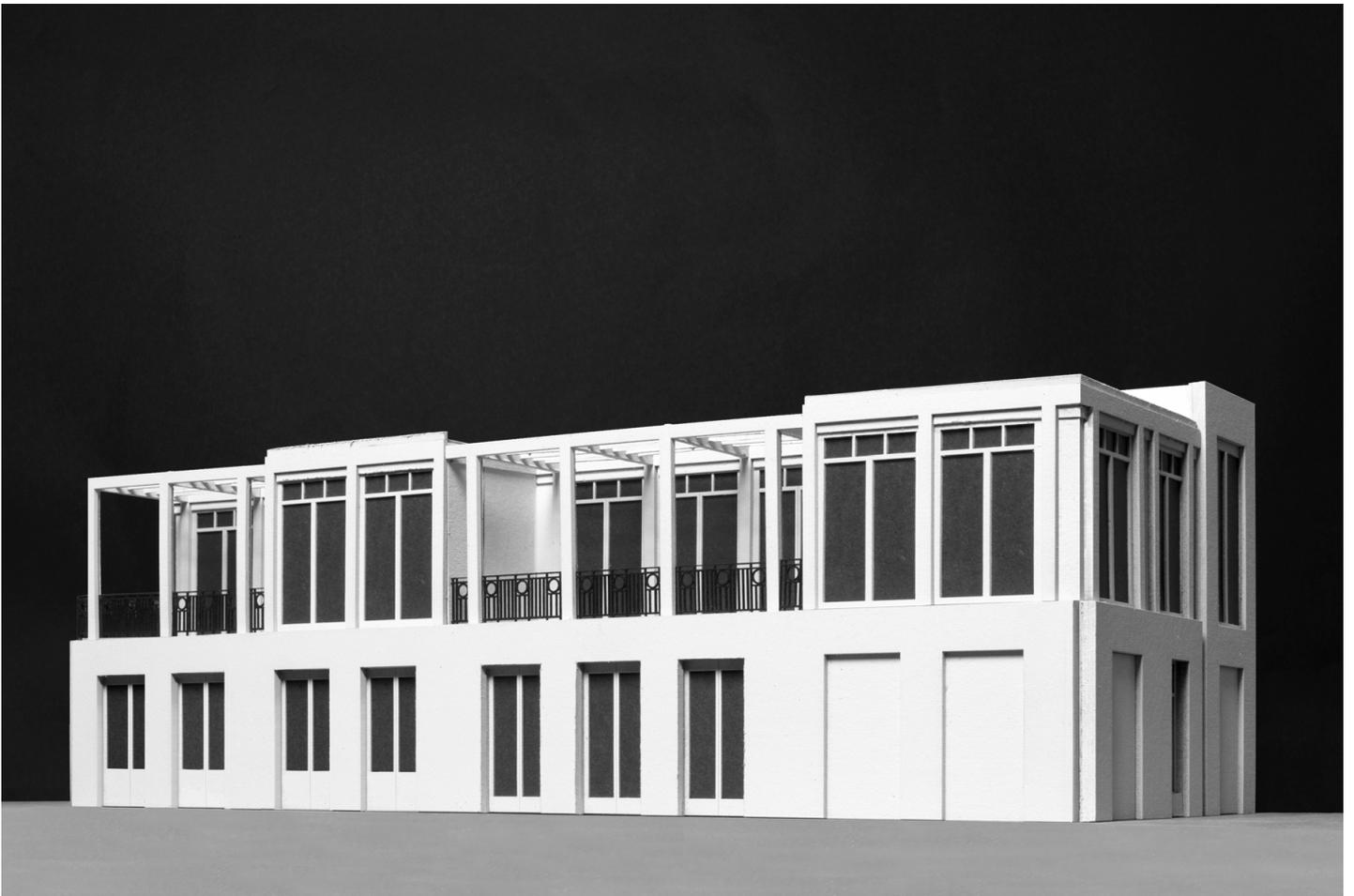
Figure 58. Model 1:50.
The restaurant seen from the harbour, expressing
an interplay of solids and voids, establishing its
own place.
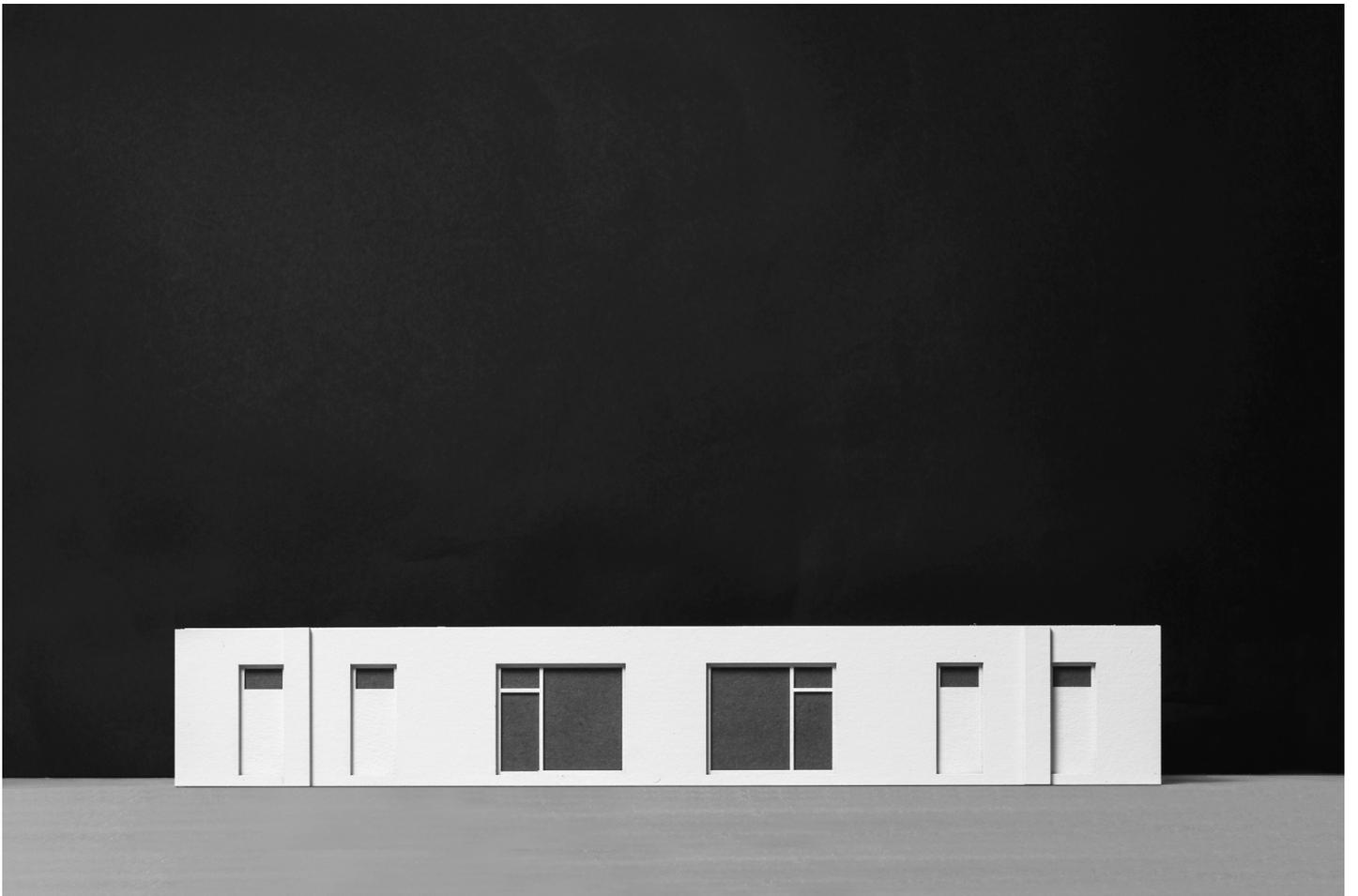
Figure 59. Model 1:50.
The loggia is the most expressive element of the
service building, where the different rhythms of the
openings in the loggia and in the wall create a
certain dynamic.

Figure 60. Model 1:50.
To the park, the service building is characterized
by a convexity resulting from the diminishing width
of the wall between the openings, to relate to the
spatial concave effect of the surrounding trees.
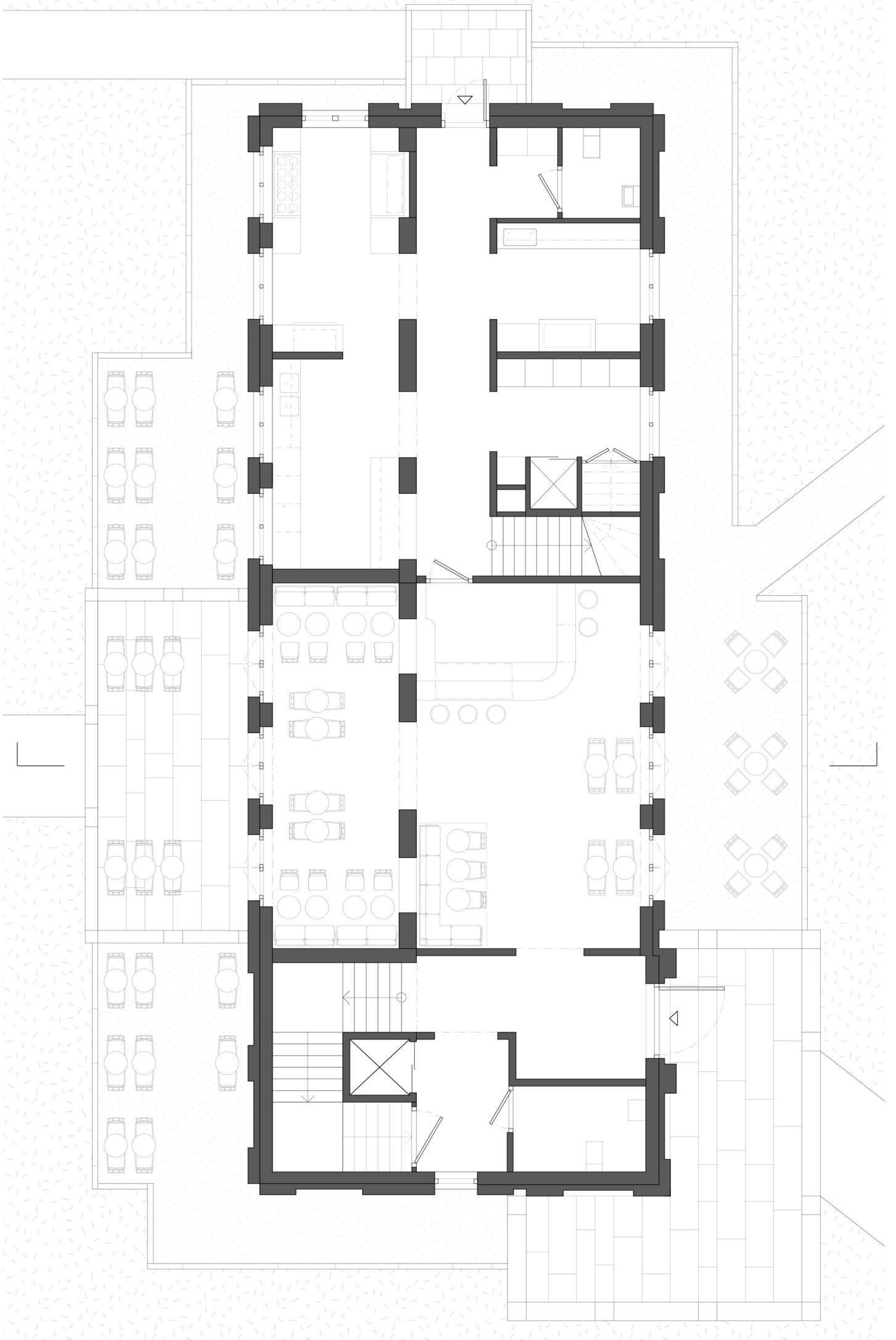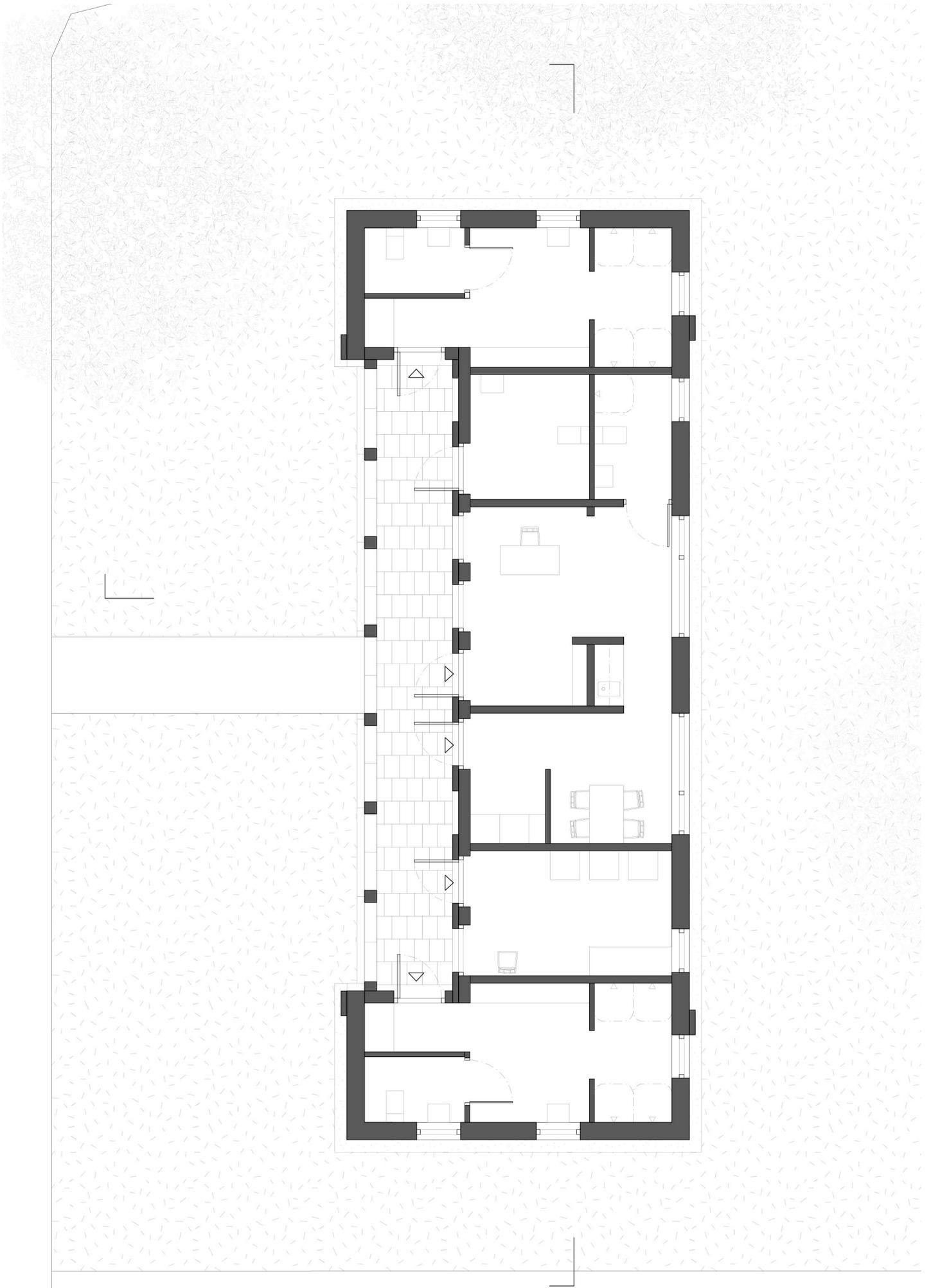
Figure 61-62. Plan Ground floor 1:100
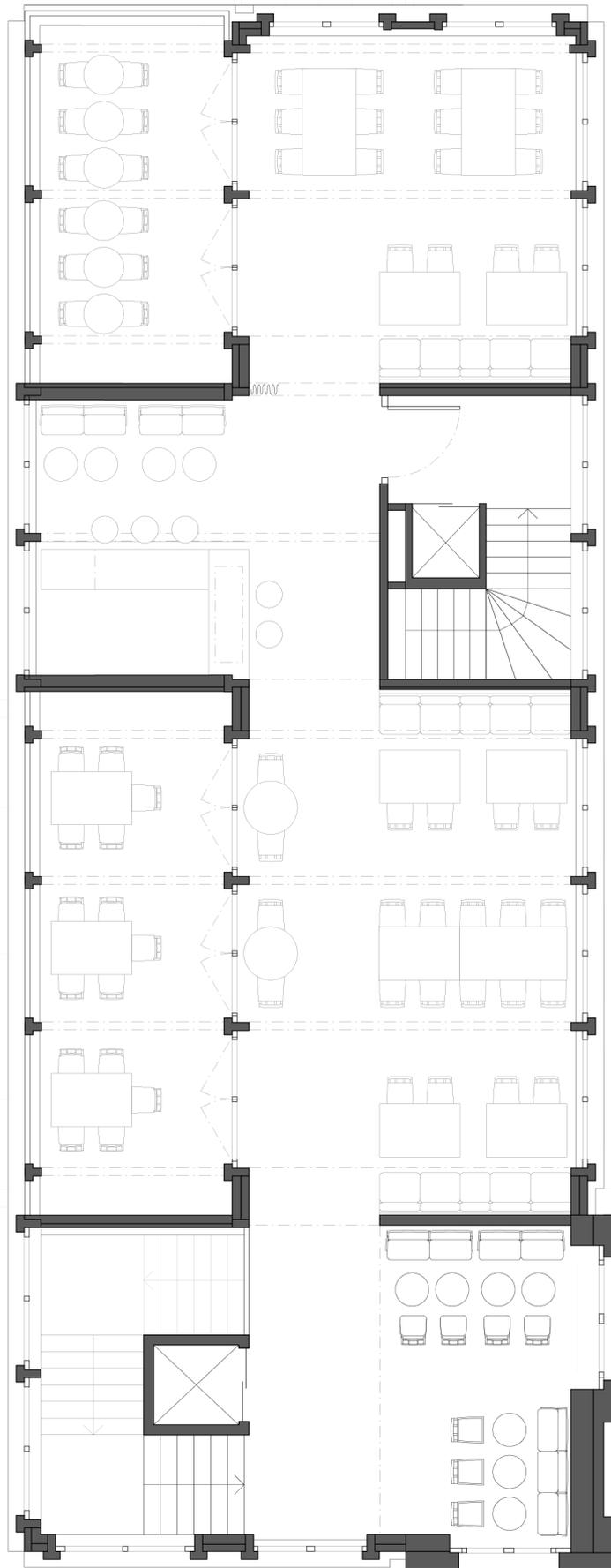
Figure 63. Plan First floor 1:100
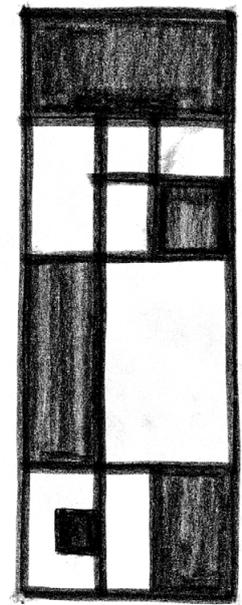
Figure 64. Composition sketch:
Spatial rhythm in interior spaces of 1st floor, the character of the interior spaces is composed by well defined yet interconnected rooms, allowing a flexibility in use and experience.
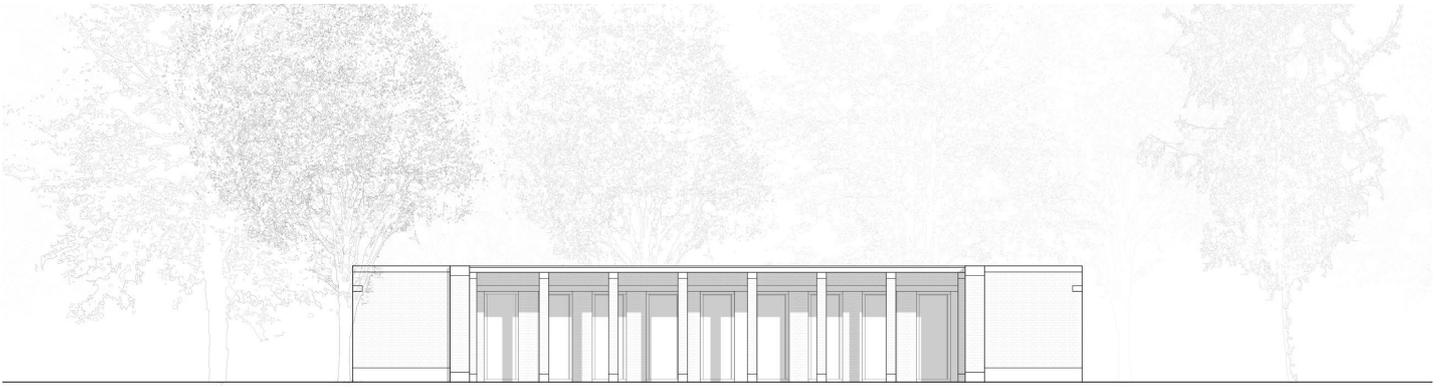
Figure 65. Elevation W (Service Building) 1:200
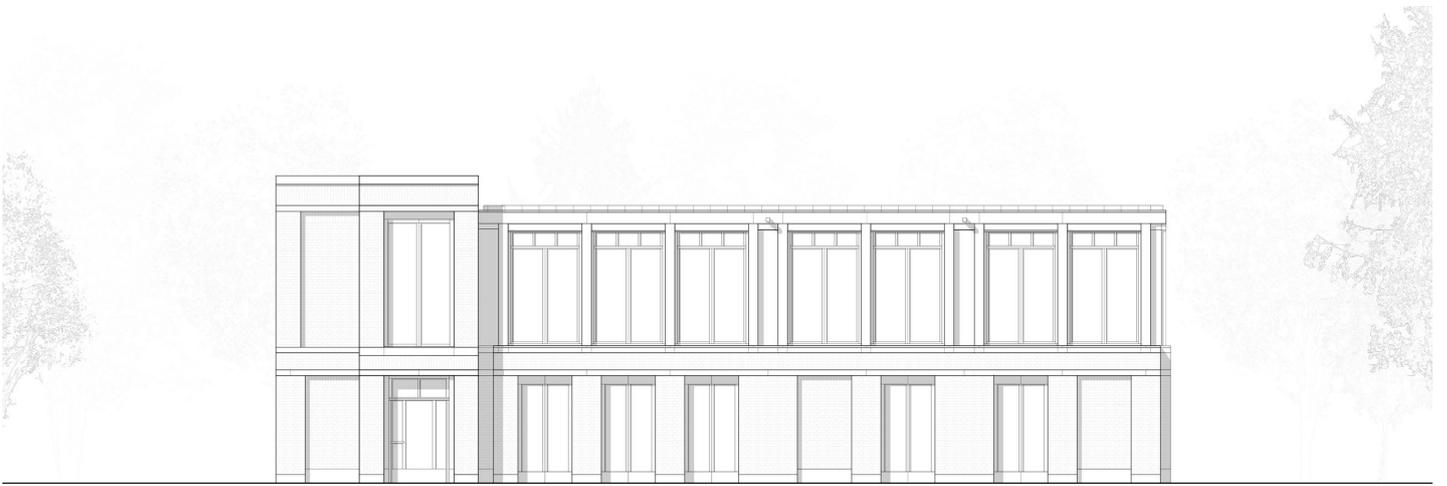
Figure 66. Elevation E 1:200
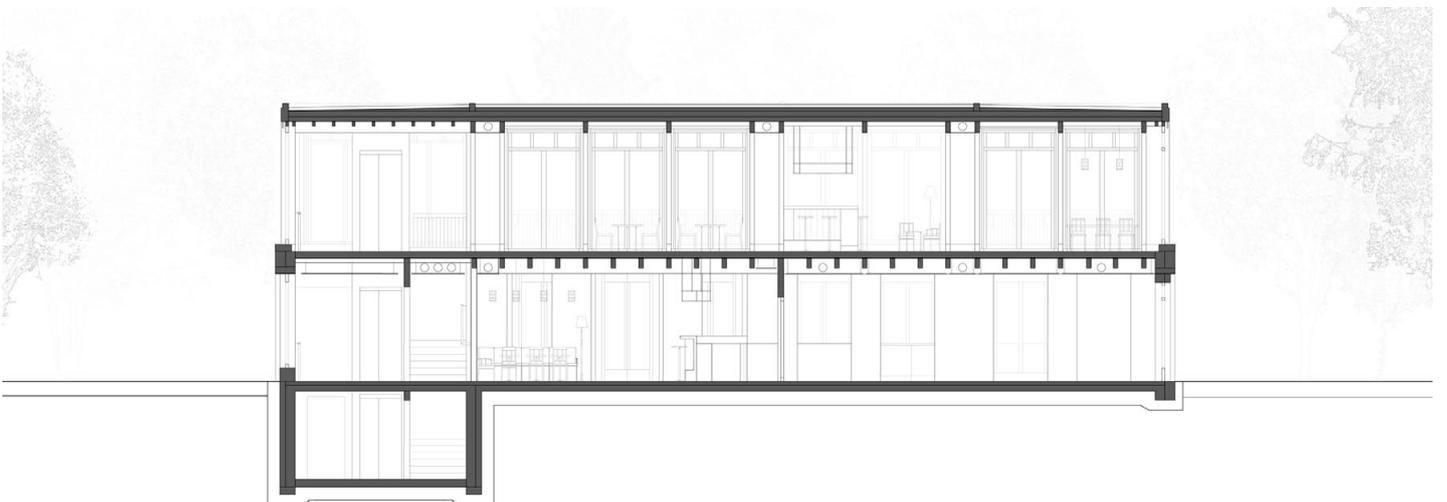
Figure 67. Longitudinal section 1:200

Figure 68. Elevation W 1:200

Figure 69. Elevation E (Service Building) 1:200

Figure 70. Longitudinal section (Service Building) 1:200

Figure 71. Relief from a Temple with Divine and Symbolic Figures, Anonymous (Egypt) (c.664 and 525 BC). In Egyptian reliefs a balance between horizontality and verticality represents harmony. Similarly, the design of the façades seeks a balance between the horizontal and the vertical plane, where the horizontal plane represents the plane of action and the vertical that of man (Arnheim, p.77).

Figure 72. Elevation S (Service Building) 1:200

Figure 73. Elevation S 1:200
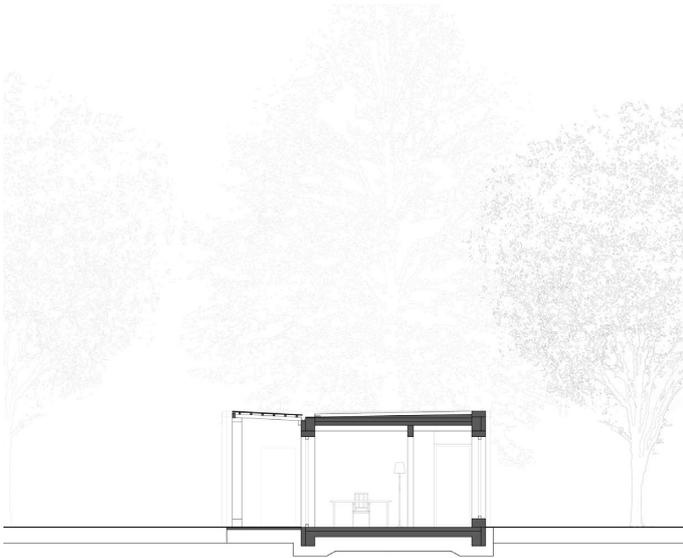
Figure 74. Transverse Section (Service Building) 1:200
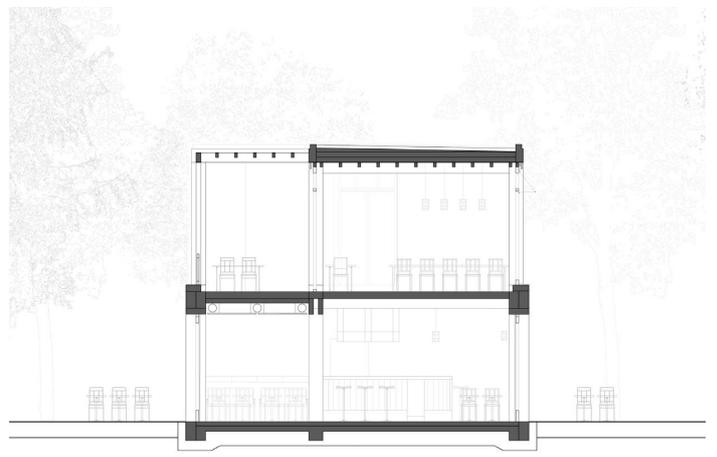
Figure 75. Transverse section 1:200
In section, both buildings are designed accordingly to create a balance and interplay of horizontal and vertical character.
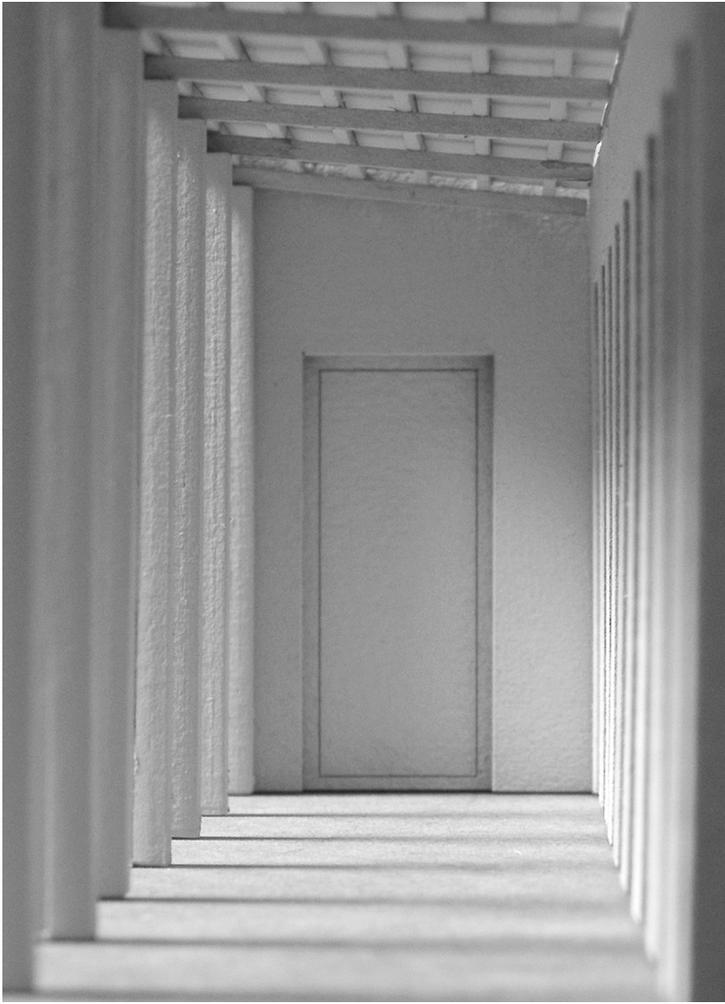
Figure 76. Model photo 1:50.
Loggia of Service Building.

Figure 77. Model photo 1:50.
The expression is strongly influenced by an interdependence of
elements yet maintaining the impression of a clear spatial unity.

Figure 79. Model photo 1:20, Ground Floor Café.
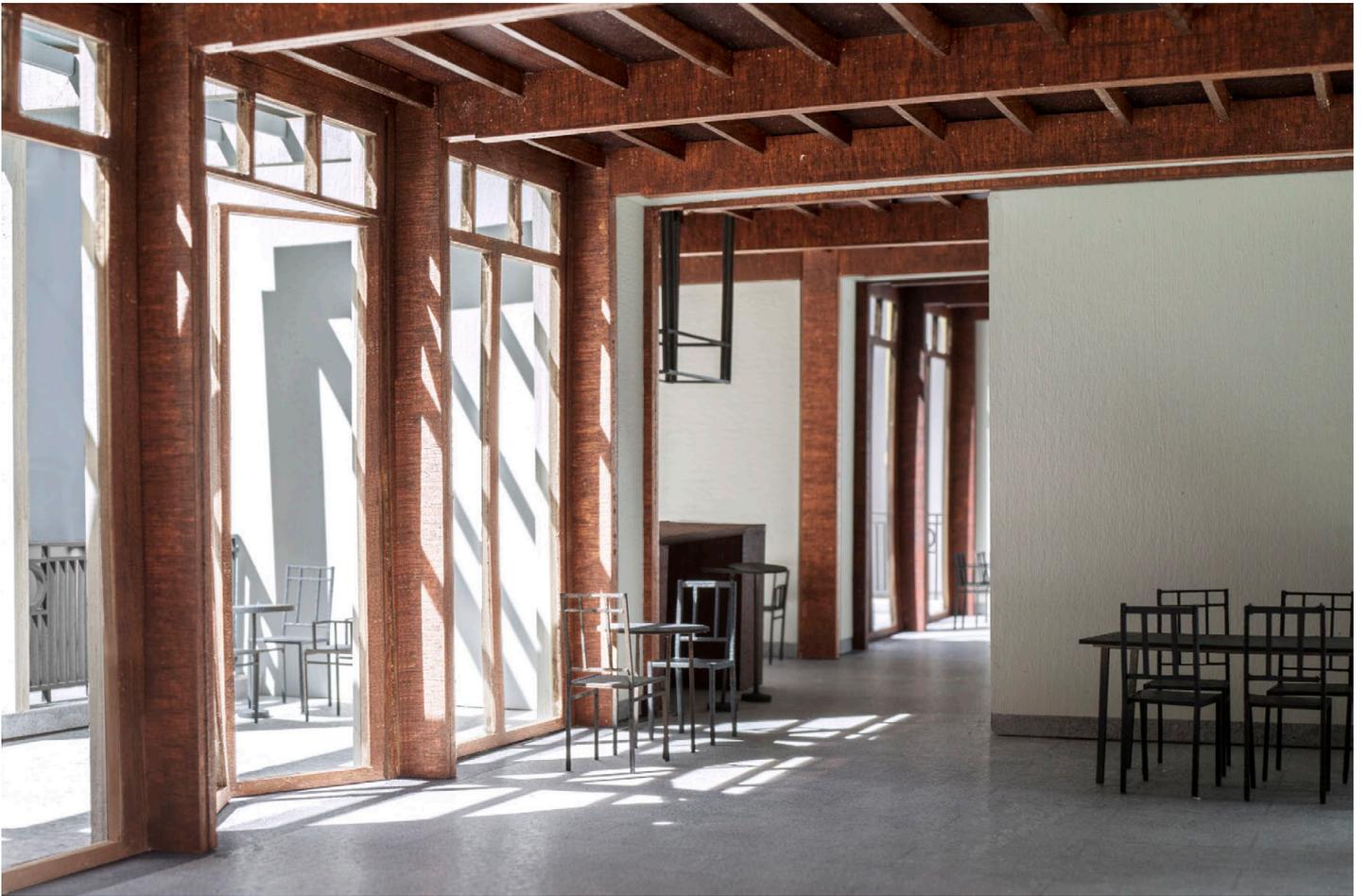
Figure 79. Model photo 1:20, 1st Floor Restaurant.

Figure 80. Model photo 1:20, Ground Floor Café.

Figure 81. Model photo 1:20, 1st Floor Restaurant.
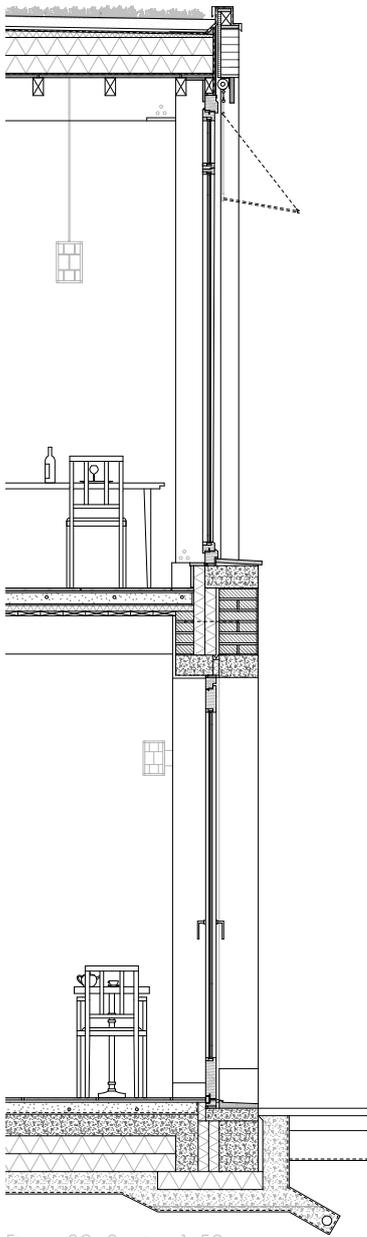
Figure 82. Section 1:50
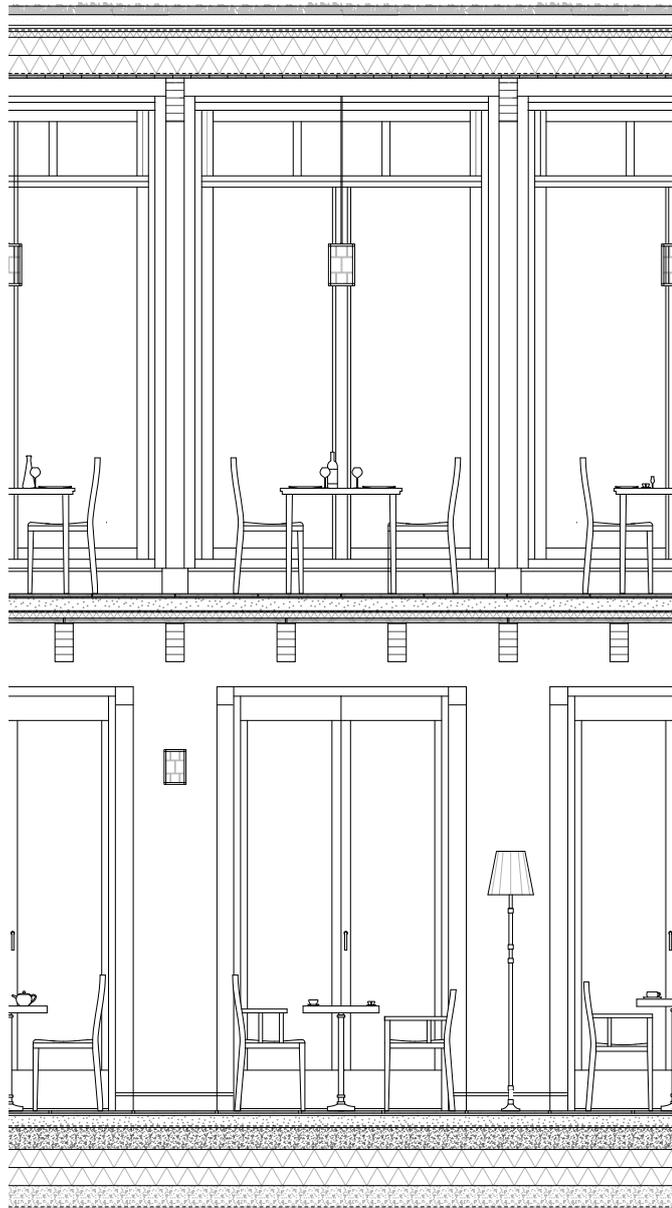
Figure 83. Inner elevation 1:50
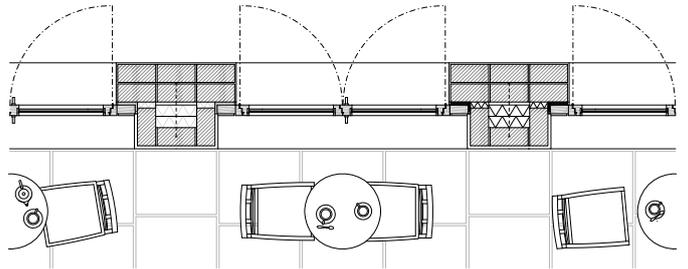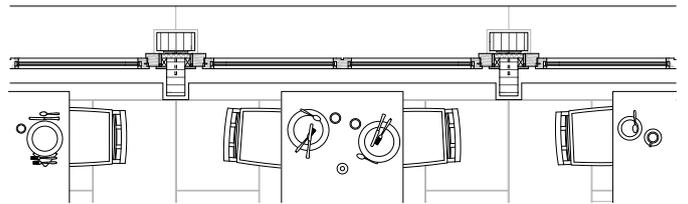
Figure 84-85. Plan 1:50
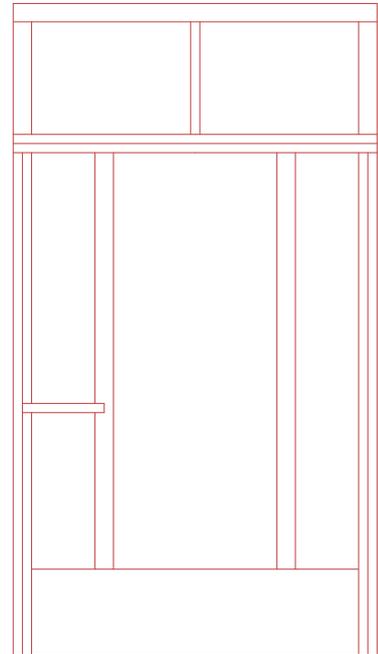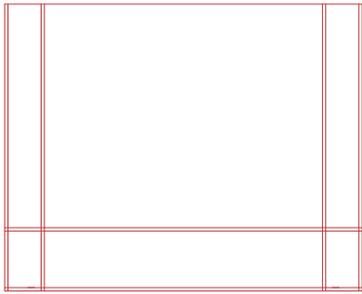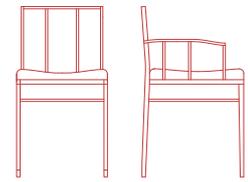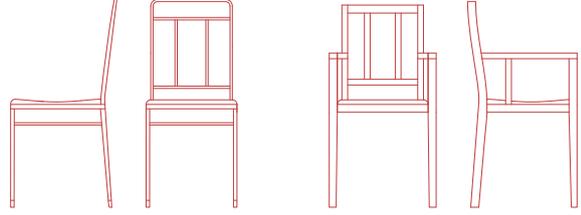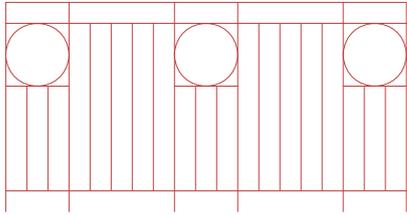
Figure 86. Elevation.
Figure 87. Expressive functional objects.
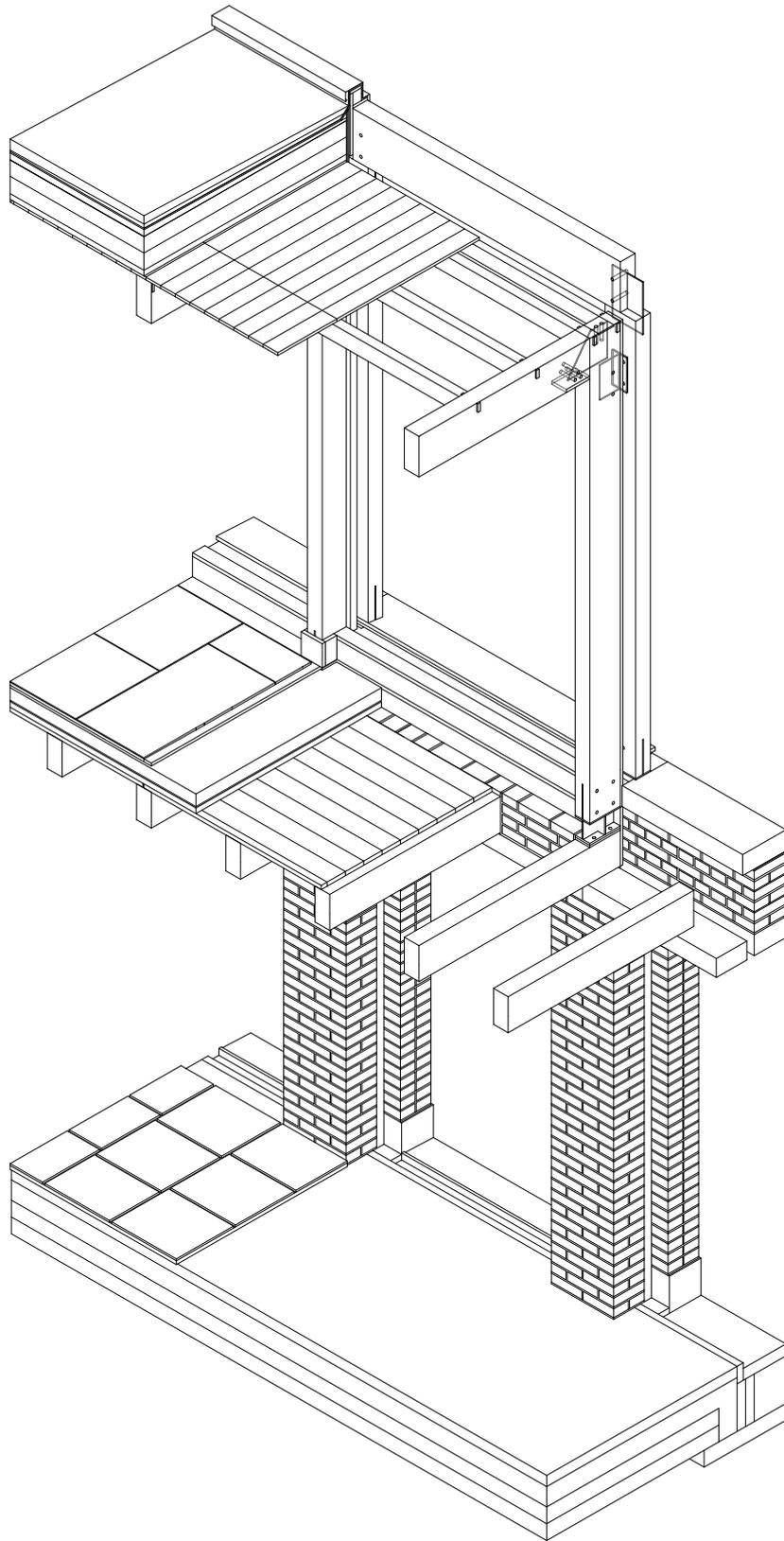
Figure 88. Structural Diagram: Axonometric View.

Figure 89. Model Photo 1:20.

Figure 90 - 95. Facade variations.

05. Discussion

- How can spatial composition as a method form architectural expression?
- How can proportions be used as a tool to create a spatial composition?
- How can spatial composition increase the perception of spatial depth?

Figure 96. San Carlino alle Quattro Fontane (Borromini, 1646). *(Paolo Monti, 1950).*

Figure 97. Ospedale degli Innocenti (Brunelleschi, 1445). *(William J. Anderson, 1909).*
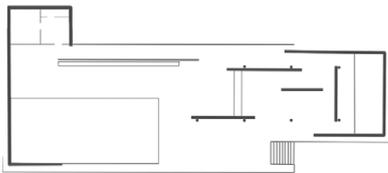
Figure 98. Barcelona Pavilion, (Mies van der Rohe, 1929).

Thinking about composition in the form of idea sketches significantly supported the creative process, as a way to decipher the spatial characteristics of the urban situation and to form and communicate ideas of building expression. While it is almost impossible to deduce the exact source of an idea, thinking in compositional terms already leads the way towards expression. For while close to all architectural design could be described as a certain composing, the conscious endeavour to search clear expression through a spatial composition of architectural elements signifies an awareness of the importance of expression in the perception of a work. This is neither limited to style nor time, although the level of complexity varies depending on the spatial properties of the elements used. For example, Borromini's *San Carlo alle Quattro Fontane* might hold a greater level of complexity than Brunelleschi's *Ospedale degli Innocenti* . However, both have their distinctive qualities and expression, resulting from the knowledge and use of architectural elements and the very conscious forming of their spatial relationships, far from any influence of chance or irregularity.

Spatial composition as a method might seem to be focused altogether on exterior expression, however it is as valid a method for the spatial characteristics of both the interior as well as the spaces surrounding the building. One need only to think about the meticulously planned *Barcelona Pavilion* by Mies van der Rohe, where with minimal means the spatial relationships between walls, pillars and slabs conjure the essence of the project. A similar interdependence of elements in the creation of both the spaces and appearance of the buildings has been sought in this thesis work. As such, the disposition and relation of the structural members of the project have been used as formative elements through compositional thinking.

It is in this forming of relations between the architectural elements themselves and their relation to the whole that proportions can be used as a valuable tool. While several different proportion systems exists, such as the Golden ratio, the Fibonacci, Modular and many more, the most important point by using proportions is that it enables reoccurring relationships to be formed between the parts and between the parts and the whole of a building. Even a complex building can then get a rigidity and readability through such a structuring principle. Furthermore, it gives the possibility to give shape to the relation between interior and exterior configuration and in this negotiation lies the possibility of expression, as the way the interior spaces are connected to the outside very much give character to a work.

This thesis make use of proportions based on an approximation of the Golden ratio, namely the relationships between 5/8, 3/8 and 3/5 to form a whole through an analogy of forms. When different relationships are used, it is to express a specific intent, for example related to mass or the openness a part of the interior program requires. Essentially, the configuration of the project has followed the logic of a compositional idea then further developed by the use of proportions in plan, section and elevation, eventually modelled in physical form as to experience the spatial implications of the design.
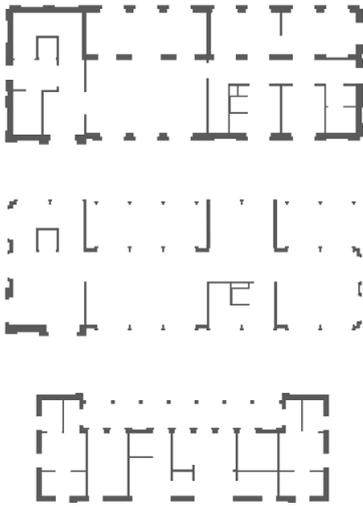
Figure 99. Structural plans 1:500.

Figure 100. Proportion study of service building.

Regarding both composition and proportion it is important to note that these methods in themselves to not constitute the success of a building, in essence composition and proportion alone is not enough, but they can be used as valuable tools to aid the artistic inspiration and creative process as architectural expression effects the impression of a work tremendously.

In terms of composition, rhythm is vital to create a vivid whole. The difficulty lies in finding a variation of the parts of the whole while still maintaining an overall impression of unity. When such a balance is achieved however, the harmony of the building can be stronger as the visual expression is one of pleasing variety. Rather than contrast, it is important to seek balance. This holds true for the relationship between verticality and horizontality as well as for the use of colour. For example, the yellow tint of the monochrome character of the castle is balanced by the blue nuance of the grey monochrome restaurant and service building. At the same time the cold character of the colour of the exterior is balanced with a warmer coloration of the interior spaces.

The perception of space relies on comparative elements. Thus, one can increase the sense of spatial depth and ones own bodily size by an arrangement to achieve a mutual nearness of elements, which can also be used to create layered spatial relationships. The division of the width of the project with the interior wall derives from these considerations and the fact the castle wings show the same spatial division gives the plan a contextual attachment. To achieve a unity and certain compactness the volumetric outline of the buildings have been kept rather intact, but with layered spatial relationships between inside and outside to form a strong relation between the buildings and their surroundings.

To work next to such an important artefact as the castle and while trying to establish a relationship to it with the use of architectural language, one should remember the implications of references forming that language. For example, the inspiration of the castle taken from the renaissance is of course not by chance. Rather, the connotations and connections to Greek and Roman architecture was of course seen as appropriate for the monumental character of the castle. Therefore, it has been important to find an expression which reflects our conditions and view on life today. For example, the rather large openings to the service spaces, such as the kitchen in the restaurant, influence the character of the project. Approximations can also be seen as a way to approach the perfect, while maintaining a human aspect to give the buildings a more vivid expression, something which is difficult with the more perfect but static total symmetry. The tectonic nature of the project also express a whole built up by its individual parts, whereas the urban idea is meant to strengthen the public, shared character of the park.

When using composition as a method, the horizon of inspiration can be broadened as composition exists in so many different fields. It is easy to become inspired by the treatment of volume in sculpture, the spatial perception of modern painters or by the rhythm of a musical piece and the emerging expression. Considering expression, it is important to allow oneself to experience it first and foremost through one's senses. To intellectualize or make a too literal interpretation often seem to blur and create distance to the essence of a work. However, it is of course of great importance to know the way to convincing expression and then spatial composition indeed seems a promising method.

References

List of References

Alm, G. (1996). Arkitekturen. In *Signums svenska konsthistoria: Renässansens konst* (p. 43-114). Lund: Signum.

Arnheim, R. (1977). *The Dynamics of Architectural Form* (p. 86). Berkeley and Los Angeles: University of California Press.

Beigel, F. & P. Christou (2017). Peter Märkli's Spatial Gestalt. In P. Johnston (Ed.). *Peter Märkli. Everything one invents is true* (p. 228-233). Luzern: Quart Publishers.

Celsing, J. (2016). *Under Construction 2015*. Stockholm: Johan Celsing Arkitektkontor.

Celsing, P. (1980), Om rummet. In L.O. Larsson, A. Ericsson & H. O Andersson (Eds.). *Peter Celsing, En bok om en arkitekt och hans verk* (p. 118-126). Stockholm: LiberFörlag: Arkitekturmuseet.

Czech, H. (2007). Cafés. (W. van Os-Thompson, Trans.). In C. Grafe & F. Bollerey (Eds.). *Cafés and Bars. The Architecture of Public Display* (p. 94-96). New York-London: Routledge.

Czech, H. (2016). *A+U Magazine*, 2016:11(554), 12-13.

Eliot, T. S. (1917). Tradition and the individual talent. *The Egoist. 6*(5), 72-73. Retrieved from https://www.bl.uk/collection-items/tradition-and-individual-talent-by-t-s-eliot.

Fulton, T. (1996). Arkitekturen. In *Signums svenska konsthistoria: Renässansens konst* (p. 115-166). Lund: Signum.

Grundström, C. (1996). Skönhetens Lagar. In B. Chrapkowski & S. Balgård (Eds.), *Arkitektonisk Proportionslära* (p. 7-12). Stockholm: Konsthögskolans Arkitekturskola.

Hildebrand, A. (1907). *Problem of Form in Painting and Sculpture*. (M. Meyer & R.M. Ogden, Trans.). New York: G.E. Stechert & CO.

Kühn, C. (2016). Hermann Czech and the disappearance of architecture. *A+U Magazine*, 2016:11(554), 14-24.

Linde, U. (1980). Celsing och fasaderna. In L.O. Larsson, A. Ericsson & H. O Andersson (Eds.). *Peter Celsing, En bok om en arkitekt och hans verk* (p.124-131). Stockholm: LiberFörlag: Arkitekturmuseet.

Loran, E. (1959). *Cézannes Composition* (2nd ed.), (p.15). Berkeley and Los Angeles: Univerisity of California Press.

Malevich, K. (1927). *Die Gegenstandlose Welt*. (A. von Riesen, Trans.). Munich: Albert Langen Verlag.

Mostafavi, M. (2012). *Approximations: The Architecture of Peter Märkli* (p.12). Cambridge: The MIT Press.

Märkli, P. (2016). London & Form and Expression . In C. Imoberdorf (Ed.), *Märkli: Professur Für Architektur an der ETH Zürich*. Zürich: GTA Verlag.

Proietti, T. (2015). The Aesthetics of Proportion in Hans van der Laan and Leon Battista Alberti. *Aisthesis. Pratiche, linguaggi e saperi dell'estetico. 8*(2), 183-199. Retrieved from http://www.fupress.net/index.php/aisthesis/article/view/17580/16399.

Selz, P. (1968) *German Expressionist Painting*. Berkeley and Los Angeles: University of California Press.

Voet, C. (2016). Between Looking and Making: Unravelling Dom Hans van der Laan's Plastic Number. *Architectural Histories. 4*(1). Retrieved from http://doi.org/10.5334/ah.119.

Image Credits

Figure 01: Penn State University Libraries Architecture and Landscape Architecture Library (2007). *Parthenon* [online photograph]. Collected from: https://www.flickr.com/photos/psulibscollections/5833096897/in/photostream/.

Figure 02: Jack ma (2010). *Briessmatha eg1* [online photograph]. Collected from: https://ru.wikipedia.org/wiki/%D0%A4%D0%B0%D0%B9%D0%BB:Briessmatha_eg1.jpg

Figure 03: Alexandre Norman (2007). Sainte Marie de La Tourette [online photograph]. Collected from: https://en.wikipedia.org/wiki/File:Sainte_Marie_de_La_Tourette_2007.jpg

Figure 04: Jebulon (2015). *Erechtheum Acropolis Athens* [online photograph]. Collected from: https://sv.m.wikipedia.org/wiki/Fil:Erechtheum_Acropolis_Athens.jpg

Figure 05: Strafforello Gustavo, La patria, geografia dell'Italia. Provincia di Firenze. Torino Unione Tipografico-Editrice (1894). *Firenze Palazzo Rucellai* [woodcut]. Collected from: https://commons.wikimedia.org/wiki/File:Firenze_Palazzo_Rucellai.jpg

Figure 07: Lindsay Grant (2011). *Inside view of Adolf Loos designed functionalist villa, Prague* [online photograph]. Collected from: https://www.flickr.com/photos/athomenetwork/5591857938/in/photostream

Figure 08: Diego Terna (2011). *Dom Hans van der Laan, St.Benedictusberg Abbey, Vaals, The Netherlands, 1968-1986* [online photograph]. Collected from: https://www.flickr.com/photos/diegoterna/35685954704/in/photolist-Q6wnJ-WnrR47-4CXebN-WpKJUV-WnrMZw-5jLVCA-Xr67t2-4auUcu-4f7ohw-4aqS9g-9UA6L-74LXxR-XDf2Sn

Figure 09: seier+seier (2010). *the smithsons, peter and alison smithson, economist building, london 1959-1964* [online photograph]. Collected from: https://www.flickr.com/photos/seier/5425382939

Figure 10: Kazemir Malevich (1914). *Black Square and Red Square* [oil on canvas]. Museum of Modern Art, New York. Collected from: https://commons.wikimedia.org/wiki/File:Black_Square_and_Red_Square_(Malevich,_1915).jpg

Figure 11: Stig Sjöstedt (nd). *Göteborgs Rådhus Fasad mot Gustav Adolfs torg* [online photograph]. Collected from: https://digitaltmuseum.se/011015013521/goteborgs-radhus-fasad-mot-gustav-adolfs-torg

Figure 13: Paul Cezanne (c.1904-1906). *Mont Sainte-Victoire and Château Noir* [painting]. Bridgestone Museum of Art, Tokyo. Collected from: https://commons.wikimedia.org/wiki/File:Paul_Cezanne_-_Mont_Sainte-Victoire_and_Ch%C3%A2teau_Noir_-_Google_Art_Project.jpg

Figure 14: Jean Louis Mazieres (2014). *Giorgio Morandi. 1890-1964. Bologne. Nature morte 1920* [online photograph]. Collected from: https://www.flickr.com/photos/mazanto/15512423455.

Figure 15: Karlsborgs fästningsmuseum (2017). Copperplate: Vadstena Castle [online photographic reproduction]. Collected from: https://digitaltmuseum.se/021017121986/kopparstick-vadstena-slott-med-hamnbassangen

Figure 20: Unknown (Marinmuseum). *Vadstena klosterkyrka, interiör* [online photograph]. Collected from: https://digitaltmuseum.se/021015563042/vadstena-klosterkyrka-interior

Figure 21: Sigurd Curman (1901). *Gränd i Vadstena* [online photograph]. Collected from: https://digitaltmuseum.se/021016314575/grand-i-vadstena

Figure 47: Unknown (Järnvägsmuseet) (c.1930-1940). *Vadstena Slott från flygplan* [online photograph]. Collected from:https://digitaltmuseum.se/021018104589/vy-over-slottet-i-vadstena

Figure 56: Antonio da Corregio (1531-1532). Danaë [oil painting]. Galleria Borghese, Rome. Collected from: https://commons.wikimedia.org/wiki/File:Correggio_008.jpg

Figure 71: Anonymous (Egypt) (between 664 and 525 BC). *Relief from a Temple with Divine and Symbolic Figures* [limestone relief]. Walters Art Museum Baltimore. Collected from: https://commons.wikimedia.org/wiki/File:Egyptian_-_Relief_from_a_Temple_with_Divine_and_Symbolic_Figures_-_Walters_2289.jpg

Figure 96: Paolo Monti (1950). *Servizio fotografico* [online photograph]. Collected from: https://commons.wikimedia.org/wiki/File:Paolo_Monti_-_Servizio_fotografico_-_BEIC_6346853.jpg

Figure 97: Internet Book Archive Image (1909). *OSPEDALE DEGLI INNOCENTI, FLORENCE. FILIPPO BRUNELLESCHI, Archt.* [scan from book]. Collected from: https://commons.wikimedia.org/wiki/File:The_architecture_of_the_renaissance_in_Italy_-_a_general_view_for_the_use_of_students_and_others_(1909)_(14577666327).jpg.